

**READINESS IMPACT OF RANGE ENCROACHMENT
ISSUES, INCLUDING ENDANGERED SPECIES AND
CRITICAL HABITATS; SUSTAINMENT OF THE
MARITIME ENVIRONMENT; AIRSPACE MANAGE-
MENT; URBAN SPRAWL; AIR POLLUTION;
UNEXPLODED ORDINANCE; AND NOISE**

HEARING
BEFORE THE
SUBCOMMITTEE ON READINESS AND MANAGEMENT
SUPPORT
OF THE
COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE
ONE HUNDRED SEVENTH CONGRESS
FIRST SESSION
MARCH 20, 2001

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TUESDAY, MARCH 20, 2001

U.S. SENATE,
SUBCOMMITTEE ON READINESS
AND MANAGEMENT SUPPORT,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:31 a.m., in room SR-232A, Russell Senate Office Building, Senator James M. Inhofe (chairman of the subcommittee) presiding.

Committee members present: Senators Inhofe, Bunning, Kennedy, Akaka, and E. Benjamin Nelson.

Committee staff member present: Ann Mittermeyer, assistant counsel.

Professional staff members present: George W. Lauffer and Cord A. Sterling.

Minority staff members present: David S. Lyles, staff director for the minority; Peter K. Levine, minority counsel; and Michael J. McCord, professional staff member.

Staff assistants present: Beth Ann Barozie, Kristi M. Freddo, and Michele A. Traficante.

Committee members' assistants present: Robert Alan McCurry, assistant to Senator Roberts; David Young, assistant to Senator Bunning; Menda S. Fife, assistant to Senator Kennedy; Ross Kawakami, assistant to Senator Akaka; Eric Pierce, assistant to Senator E. Benjamin Nelson; and Brady King, assistant to Senator Dayton.

**OPENING STATEMENT OF SENATOR JAMES M. INHOFE,
CHAIRMAN**

Senator INHOFE. We will call the hearing to order. Now, we have several members who are not here who are going to be here, including Senator Akaka, who is our ranking member on this subcommittee, but he is en route right now. We are also very privileged and honored to have Senator Kennedy, who is not a member of this subcommittee but is a member, of course, of the Armed

Services Committee, and has intense interest in this, so we will just treat you like a member, Senator.

Senator KENNEDY. Thank you.

Senator INHOFE. I welcome everybody here. We have a pretty good sized crowd. We have some new members on this subcommittee that are newly elected, and I understand they are going to be here. They are Senators Bunning, E. Benjamin Nelson, and Dayton.

The Readiness and Management Support Subcommittee is meeting today to review a series of encroachment issues that the Senior Readiness Oversight Counsel has identified as having adverse effects on the military readiness. The specific encroachment area issues that the subcommittee will cover in this hearing will be the Endangered Species Act critical habitats, unexploded ordnance, maritime sustainability, national air space system, air quality, airborne noise, and urban growth.

Now, we have another major issue that we will be having a hearing on, and we are going to devote an entire hearing on the issue of radio frequency spectrum probably sometime in the next month.

Today, I am particularly interested in hearing about the cumulative effects of the issues, because only then will we be able to understand the gravity of the problems and explore ways to negate the readiness impact.

I have traveled around to almost all the installations over the past 4 years that I have chaired this subcommittee, and whether it is the red-cockaded woodpecker at Fort Bragg and Camp LeJeune, or the sea turtles at Vieques, or the Sonoran pronghorned antelope—I have not seen one of those yet—on the Goldwater range, urban growth in southern California, air space use on the east coast, or unexploded ordnance at Massachusetts Military Reservation, which had to suspend training for a period of time—I know that is of interest to you, Senator Kennedy, and also, as the former—I was the Chairman of the Subcommittee of Environment and Public Works. It was called clean air property rights, wetlands and nuclear safety, and that is where I became interested in how these two jurisdictions affect each other.

These are issues that are expensive. They do affect training, and I would like to hear from you as to how they affect training, and so why don't you—if you have an opening statement, Senator Kennedy, go ahead, and then we will hear from our witnesses.

STATEMENT OF SENATOR EDWARD M. KENNEDY

Senator KENNEDY. Thank you very much, Mr. Chairman. I want to express my appreciation to you and Senator Akaka for permitting me to attend this hearing, and I want to thank you so much for the attention you are giving to this issue. I think this is an area of public policy that many of us have not thought about, but is a very real concern in a part of our state, and I would like to make just a brief opening comment about the matter.

I firmly believe that the military must do a better job working with the communities that surround their training areas, and of understanding how this training affects the environment. Only a very few of our military training sites are isolated today. In many cases, where military bases were established long ago, civilian com-

munities have grown up around them, sometimes right up to the fenceline of the base. On the bases where there are active or inactive impact areas or ranges, this can mean that where there used to be a mile or more of buffer, the buffer may now only be several hundred yards. While isolated facilities do not have to deal with the same civilian encroachment issues, they must deal with the impact of complying with the many and varied Federal laws, as the chairman has stated.

Our Armed Forces need quality training areas where they can practice their skills, skills which can mean the difference between life and death in battle. All of these training areas must also be effectively managed. If they are not, the ongoing problems at the Massachusetts Military Reservation could very well happen again on other bases across the country.

We are still in the middle of a very challenging time regarding the future use of the Massachusetts Military Reservation. When MMR was established over 50 years ago, I am sure that no one had even the slightest notion that it was directly over the Upper Cape's water supply. But, when community members and Federal and state regulators began to question whether the military activities were affecting the environment and the quality of the Cape's drinking water, instead of looking into the problem, the military balked.

Over 3 long years later, and only after all live-fire training, except for small arms fire with green ammunition, was forced to cease, have the Army and the Army Guard finally gotten serious about the process of working with the community to finalize a new master plan for the future use of the base.

I cannot help but wonder if active cooperation with the community and regulators might not have led us down a different path, one where military training, clean drinking water, and environmental stewardship were balanced to benefit all.

The community surrounding MMR has been waiting over 3 years for the military to join them, and now thankfully they are finally working toward that outcome. Protecting the military training areas requires open communications with the surrounding communities, cooperation with Federal and state regulators, and proper management of bases, including the issue of how to clean up unexploded ordnance to ensure the long-term health of the base.

Our Armed Forces must tackle these issues head on. If they do not, future military readiness could suffer. This is an extraordinarily important issue. The area of the Upper Cape is the fastest growing area in our state, and the principal aquifer is underneath the reservation. There is a long history here, which I will not take the time of the subcommittee to review, and I do not think anyone could have really anticipated, even a few years ago, how these issues would affect the Cape, but it is the predominant issue that is of central concern to hundreds of thousands of people in that area.

We want to try and find ways of working together to address these issues and also to make sure that the appropriate interests of the Armed Forces are protected.

I thank the chair.

Senator INHOFE. Thank you, Senator Kennedy. We are joined by Senator Bunning from Kentucky, a new member on this sub-

committee, and by our Ranking Member, Senator Akaka. Why don't you start, Senator Akaka, with any opening statements or comments you would like to make.

STATEMENT OF SENATOR DANIEL K. AKAKA

Senator AKAKA. Thank you very much, Mr. Chairman. Today's hearing is my first as Ranking Member of the Subcommittee on Readiness and Management Support. This subcommittee, as we all know, plays a crucial role in meeting the day-to-day needs of our Armed Forces.

Senator Inhofe, I am aware of your deep commitment to the work of our subcommittee, and I look forward to working with you in this worthwhile endeavor.

Today's hearing will examine the impact that a number of factors external to the Department of Defense are having on military training and operations. These factors include expanding urban areas and increasing demands on air space in the vicinity of the military bases, as well as limitations imposed by a number of environmental laws and regulations.

There is no doubt that our military has had to adjust training practices and incur added expenses to address concerns about endangered species, critical habitats, the marine environment, air space management, air pollution, unexploded ordnance, and noise pollution. In some cases, these constraints may be starting to have an adverse impact on the military's ability to perform its mission.

Some of these problems may be avoided. I am prepared to work with the chairman to assist the Department in finding constructive ways to comply with the applicable laws and regulations with a minimum impact on training and readiness. I am also prepared to help address any unintended and avoidable consequences those laws and regulations may be having on military readiness.

We ask a lot of our men and women in uniform, and we should not ask them to go into harm's way without the benefit of the most realistic training available. In my state of Hawaii, I have worked with the military to try and address issues raised in the community about the impact of training on the cultural and historical sites, endangered species, fire damage, and other issues.

By working together in this way, I am hopeful that we will be able to find an appropriate set of conditions under which needed military training can be conducted. At the same time, however, the Department needs to recognize our Nation's environmental laws and regulations are not just another enemy to overcome. To their credit, the military services have recognized that the DOD environmental program is essential to protect our forces and the military communities from environmental health and safety hazards.

Moreover, the Department's good faith effort to comply with applicable environmental laws and regulations enables it to retain the confidence of the American people that it will act as a responsible custodian of the public lands, and as a good neighbor to the communities in which DOD bases are located.

Mr. Chairman, the Department of Defense has built up a reservoir of goodwill with the American public by maintaining a strong environmental cleanup and compliance program over the last decade. As we address the issues before us today, the Depart-

ment should keep in mind that its positive relationship with the Governments and citizens of our states and communities is dependent to a significant extent upon its role as a good neighbor and a faithful custodian of the public lands.

Thank you very much for this opportunity, Mr. Chairman, and I look forward to the testimony of today's witnesses.

Senator INHOFE. Thank you, Senator Akaka.

Senator Bunning.

STATEMENT OF SENATOR JIM BUNNING

Senator BUNNING. Thank you, Senator Inhofe. I am excited to be serving on this subcommittee. I know it is a critical subcommittee, as far as the readiness of all of our Armed Services is concerned. I am anxious to hear our witnesses today, particularly on training sites that have had problems and ranges that have had problems. As we all know, they are numerous, but some problems are more public than others.

I know that Senator Akaka and Senator Inhofe are deeply dedicated to ensuring that all of our services have the readiness support that they need. I am anxiously looking forward to your testimony. I have an additional statement for the record that I will submit.

Thank you very much.

[The prepared statement of Senator Bunning follows:]

PREPARED STATEMENT BY SENATOR JIM BUNNING

Mr. Chairman, thank you for holding this hearing. Encroachment issues are a serious matter and can ultimately affect the readiness of our military and the security of this nation. It is appropriate and timely to have this hearing.

In the commonwealth of Kentucky—the issue of encroachment touches on two of our Army's installations.

At Fort Knox, we train soldiers to maneuver and fire tanks. We are the home of mounted warfare and we want to keep it that way. Fort Knox has been updating its current tank range and training programs. Fort Knox wants to expand its training range and develop 2,000 undeveloped acres on base just north of its current range. However, this would allow range activities to occur in undeveloped wildlife areas and closer to residents in Meade and Bullitt Counties, KY. We have had local officials and residents in these counties concerned about the environmental impact and noise levels surrounding the expansion of this training range at Fort Knox.

At Fort Campbell—near Hopkinsville, KY—we fly troops from the base's airfield for training and missions abroad. However, with Hopkinsville's population growth and urban sprawl, an issue has risen surrounding the bases' airfield. commercial development is creeping closer and closer to the airfield's runway.

This is giving the community surrounding Hopkinsville great concern regarding noise levels and safety from jets and planes landing and taking off. The Army is concerned about their ability to perform their everyday activities to ensure a reactive and dependable force.

Yes, these encroachment concerns surrounding Fort Knox and Fort Campbell are all important. They do need to be addressed. It is my hope that we can find a solution to make every party happy—but I know that is not always the case.

But this is certain—we cannot allow encroachment to hamper our training activities—whether it be Army training or training by any other branch. this further puts our readiness capabilities at risk. Ultimately, the soldiers are at risk who put their lives on the line for our freedoms. If they are not properly trained—they cannot effectively defend themselves and this Nation.

Senator INHOFE. I think, Senator Bunning, this is the subcommittee that deals with readiness and training and military construction, and we are really in a crisis right now. This is one area we have never had, I do not believe anyone has ever had a hearing

on, but we are going to have to consider some of the problems that are out there.

Now, for the purposes of your opening statement, your entire statement will be made a part of the written record, but I want to give you adequate time, so if you really need the time, go ahead and take it, but try to keep it to about 5 to 7 minutes, and we will start with you, Admiral.

STATEMENT OF VICE ADM. JAMES F. AMERAULT, USN, DEPUTY CHIEF OF NAVAL OPERATIONS, FLEET READINESS AND LOGISTICS

Admiral AMERAULT. Thank you, Mr. Chairman, and distinguished members of the committee. Thank you for this opportunity to speak on some of the most difficult challenges that we face in maintaining the readiness of our fleet and Marine Corps.

I know that this committee has been a supporter consistently of the soldiers, sailors, marines, and airmen, and it is very greatly appreciated. Forward-deployed naval forces are the front line that protects our Nation's economic, political, and security interests around the globe. Our naval forces in particular are expected to provide immediate response in times of crisis, therefore they must be credible, combat ready forces that can sail anywhere at any time to demonstrate America's resolve and, if necessary, to prevail in combat with minimum collateral damage.

Readiness is the foundation of the fleet's warfighting capability, and there is a direct link between fleet readiness and training. Having experienced combat first-hand, I can assure you that there is no substitute for training. Let me also stress that in a world where advanced weapon systems are available to anyone for the right price, no amount of technology, hardware, personnel, or leadership, can substitute for training, and that means training the way we fight.

When a marine or soldier calls for gunfire or close air support in future combat, we cannot afford to have the ship or aircraft crew learning on the job. That could be a lesson written in blood. The foundation of military readiness is training, and the building blocks of training are molded on our ranges. Ranges are where we train in an environment that most closely mimics real combat. I think this is essential, because nothing takes the place of doing it for real. That is why full access to our ranges is vital to fleet readiness.

The use of our ranges, however, is being constrained increasingly by sometimes broad and ambiguous regulation and expanding encroachment. These challenges confront us despite our continuing commitment to environmental stewardship. That commitment is underwritten by an investment of \$900 million a year, approximately, in support of environmental programs.

Since 1970, however, environmental legislation and implementing regulations have expanded considerably. When these laws were adopted, they focused primarily on civilian commercial activity. Their application to military training and the potential impacts on military readiness were not fully discussed or anticipated. Now, I think we know better. Broad interpretations of ambiguities, or failure to accommodate and consider unique military activities, have

imposed significant burdens on military training, often with very little actual benefit to the environment. Even worse, it has provided a powerful weapon to those who oppose military activities, for whatever reason.

Further complicating the issue is the application of the precautionary approach for managing protected resources. This approach says that in the absence of scientific information to the contrary, our proposed training is assumed to harm the environment.

The burden of legal compliance is exacerbated by the shrinking real estate available due to natural resource conservation. Residential and commercial developments around our once-isolated ranges reduce available conservation areas outside of our facilities. Our installations and ranges, on the other hand, have proven to be safe havens for our country's natural resources. Consequently, our property is becoming a refuge for endangered species. This has led to a corresponding decrease in our ability to use many of the training ranges that they are on for their intended purposes.

The same pattern of encroachment we are seeing around our ranges is beginning to emerge around our air space as well. In part, this is because public perception of the need for military training has changed since the end of the cold war. For example, people no longer feel noise generated by low-level flights and carrier landing practices is essential to national security, but, rather, is a local nuisance. Although no one issue is solely responsible for impairing readiness, I believe the cumulative effect is inflicting a thousand cuts.

The resulting impairment in readiness manifests itself in a variety of ways. For example, range encroachment impacts readiness by reducing available training days. Training realism is diminished by mitigation measures taken to comply with environmental regulations. That mitigation also adds significant costs to our training. To meet mitigation requirements during one recent battle group exercise, we spent \$300,000 to avoid even the possibility of harassing marine mammals and sea turtles.

We have pursued several options to balance military readiness and environmental conservation. When a range was unavailable, we sought work-arounds, changing the way we train to comply with an environmental regulation or encroachment. Sometimes, those very work-arounds become increasingly themselves under attack. For example, we moved some of the Atlantic fleet's air-to-ground training to Pinecastle Range in Northern Florida. Some are now clamoring for closure of that range. We are looking at training alternatives such as computer simulators and other technologies to enhance readiness, but based on combat experience, I can tell you that no amount of alternatives can ever replace entirely the actual maneuver and live-fire training.

Our most innovative response to environmental encroachment is our maritime sustainability initiative. What began nearly a year ago as an enterprise to address the effects of sound on marine mammals has evolved into an initiative whose overall goal is to achieve sustainable readiness in congruence with environmental laws and regulations.

This initiative is based on a four pillar strategy, a sound legal position. In other words, knowing what the law says and where we

stand within the law, knowledge superiority, which refers to the Navy's goal of obtaining the best science available to improve the quality of our decisionmaking and thereby reduce the risk of environmental harm, consistent policies and procedures, policies and procedures that the regulatory community can understand and deal with, and engagement and education, letting people know what we need to do, why we need to do it, and engaging with them to attempt to come to a reasonable solution.

Despite our best efforts, our ability to maintain a combat-ready fleet is still challenged by existing laws and regulations. We do not seek a total exemption from existing laws. We are proud of our stewardship and our effort to protect the environment. Impacts on readiness, however, must be considered when applying environmental regulation to military training activities. To restore balance, we need your support. We request that Congress take steps to ensure that impacts on military readiness are a consideration in environmental laws and regulations, reducing overbroad and inflexible application to military training. We owe that much to our sons and daughters that we put in danger everyday.

Mr. Chairman, members of the panel, I thank you for your consistent leadership and support, and will be pleased to respond to any questions.

[The prepared statement of Vice Admiral Amerault follows:]

PREPARED STATEMENT BY VICE ADM. JAMES F. AMERAULT, USN

Mr. Chairman and members of the committee, thank you for the opportunity to speak to you about some of the challenges we face in maintaining the readiness of our naval forces.

I. TRAINING RANGE READINESS OVERVIEW

Our forward-deployed naval forces are strategically positioned in key regions of the world that are vital to our nation's trade, communications, and political interests. Mobile, flexible, and sustainable, these naval forces operate unencumbered by sovereignty issues. It is precisely because of their credible combat capability that we play a key role in maintaining worldwide economic, political and military stability. Our naval forces are lethal warfighting instruments immediately available to our joint-combined warfare commanders when needed because they are trained and ready for combat. Training and readiness form the solid foundation of our credible combat capability, and no amount of technology, hardware, personnel or leadership can achieve this readiness without access to quality training ranges in the United States to prepare our sailors and marines for the rigors of combat.

Our ranges, individually and collectively, provide land, sea, and airspace where our sailors and marines can train as they will fight and test and evaluate new capabilities for the future. Ranges provide a controlled and safe environment with threat representative targets that enable our forces to conduct realistic combat-like training as they undergo all phases of the graduated buildup needed for combat ready deployment. They also provide instrumentation that captures the performance of our tactics and equipment in order to provide the feedback and assessment that is essential for constructive criticism of personnel and equipment. Finally, live-fire ranges allow our naval forces to conduct a complete assessment of their ability to put weapons on target with the highest degree of precision possible, and under conditions which mimic the stresses of combat to the greatest degree possible.

There is an obvious relationship between training and maximum performance in combat. The trained aircrew requires fewer sorties to accomplish assigned missions, which in turn, results in less risk to personnel and equipment, and less chance of collateral damage to innocent noncombatants or friendly forces. Training ranges are where the learning takes place and where the skills are honed. In simple terms, few, if any, marksmen have ever picked up a rifle and been able to hit the bullseye without extensive and repetitive practice at a rifle range.

From a historical perspective, the relationship between practice and success in combat has repeatedly been shown to exist. During the air war over Vietnam in late

1968, the Navy lost 10 aircraft and shot down only 9 MiGs. They also fired over 50 air-to-air missiles without achieving a single kill. In 1969, the kill ratio increased to 12.5 to one. This dramatic improvement is directly attributable to the introduction of Top Gun graduates to the fleet. Top Gun trained aircrews, then as today, use a comprehensive and intensive ground and flight syllabus that includes extensive, realistic, combat-like training on basic and instrumented ranges. Our experience from combat missions conducted during Operation Desert Fox and in the Balkans demonstrates a strong statistical correlation between realistic training and combat success. The Strike Fighter Advanced Readiness Program (SFARP), the Navy's graduate level strike fighter school that is scheduled during the early part of each Carrier Battle Group's training cycle, is having the greatest positive effect on combat success of all strike training done during the training cycle before deployment. Like Top Gun, the single most critical aspect of this training is access to quality airborne instruction on realistic training ranges, where the end-to-end process required to safely and successfully employ live ordnance is exercised.

While our naval forces may have decreased in number, our requirement for ranges has not. Today's higher performance aircraft and ships employ weapons of greater capability, but also of greater complexity and unique delivery tactics. The combination of capability, complexity, and tactics also translates into the need for larger ranges.

When our vital ranges are not available for training because they are encumbered by encroachments, our state of readiness is at risk. This is complicated by the fact that encroachment issues are complex, varied, and involve multiple Federal, State, and local agencies, Congress, non-governmental organizations, and the public. In dealing with its effects, we have borne a significant increase in administrative and human costs (time away from home, flight hour costs, travel expenses, etc.) to achieve an acceptable level of readiness. In some instances, we have been unable to achieve the desired level. We worry that this trend will continue.

Encroachment negatively affects readiness by reducing the number of available training days; reducing training realism as tactics are modified (altitudes, airspeeds, profiles) to comply with environmental laws; causing a loss of range access altogether (either temporary or permanent); decreasing scheduling flexibility and complexity (when factoring in long lead times to assure legal compliance); and increasing time away from home during training prior to deployment. Encroachment is often gradual and can go unnoticed, but its impacts cumulatively erode our ability to deploy combat ready sailors and marines. Knowledge of these domestic pressures by our allies may influence them to deny use of their ranges by our forces.

We believe that environmental regulation has limited, and will increasingly limit our access to training ranges, and this loss of training opportunities will reduce fleet combat readiness proportionately. The Senior Readiness Oversight Council identified nine areas where DOD organizations should focus resources to mitigate the effects of encroachment through sustainable action plans and an active outreach program. The Navy and Marine Corps have adopted this approach, and have completed most elements of a coherent and comprehensive strategy that identifies core ranges and operations areas and initiatives to sustain access to them. The strategy consists of a roadmap that links range requirements and capabilities to readiness; determines readiness impacts and alternatives when a range become unavailable; minimizes encroachment impacts via sustainable action plans; reaches out to neighboring communities; emphasizes opportunities for mitigation to reduce or avoid impacts; and formalizes a Training Range Organizational structure. We believe this coordinated Service-wide approach to sustain our core ranges will guide us in this ever-challenging encroachment environment. The Department of the Navy is committed to and owes our sailors and marines nothing less than the finest and most realistic combat like training before sending them in harms' way. We have a strong history of successful environmental stewardship and will continue to be environmentally responsible in all aspects of our mission performance.

II. ENCROACHMENT TRENDS

Our naval forces must meet the mission and readiness mandate established in Title 10 of the U.S. Code that directs us to . . . "be organized, trained, and equipped primarily for prompt and sustained combat incident to operations at sea." Today we strive to meet this mandate in the face of statutory and regulatory restrictions that can have an adverse effect on our ability to operate, test, and train realistically, so that we are ready to carry out any contingency operation that might arise when we deploy. These challenges are further exacerbated by the residential and commercial development that increasingly surrounds our once-isolated installations and ranges. This "encroachment" has made many of our installations the habitat of choice for

a number of threatened and endangered species, and at times inhibits our ability to train effectively.

A. Regulatory Overview

Since 1970, there has been significant growth in environmental legislation. In the last 10 years 32 major pieces of Federal environmental legislation have been adopted or amended. This tally does not include environmental regulatory programs mandated by Executive order. It also does not include State and local environmental laws and regulations.

Further complicating interpretation of this legal regime is the application of the "precautionary approach" for managing protected resources. The precautionary approach assumes that in the absence of scientific information to the contrary, we must assume that the proposed activity will harm the environment. We are then encouraged by regulatory agencies to include mitigation measures that err on the side of conservatism.

Major environmental regulatory programs that have the most potential to affect our maritime readiness are: Marine Mammal Protection Act (MMPA); Endangered Species Act (ESA); Coastal Zone Management Act (CZMA); National Marine Sanctuaries Act; Magnuson-Stevens Act (Essential Fish Habitat); and the Migratory Bird Treaty Act. The reach of these six environmental regulatory programs is broad, affecting activity in both U.S. waters and on the high seas. While some of these laws provide for Presidential Exemption, we have declined to pursue this option to date. Our intent rather, is to comply with the law in a manner consistent with our national security imperatives, and not seek exemption from it.

The Executive Orders on Coral Reefs and Marine Protected areas also have the potential to impact our training activities.

B. Encroachment Impacts

In addition to existing legal requirements, our ability to train is affected by increasing levels of urban development around our once-isolated installation and ranges. Readiness and training areas most vulnerable to encroachment are: live-fire ranges, so are training and testing ranges where sonar and explosive sound generators are used, and many Navy and Marine Corps bases/stations.

1. Live-Fire Ranges—The continued use of live-fire ranges for Navy training and testing activities is currently threatened by regulatory constraints. We are most concerned about three important ranges: San Clemente Island (California), Vieques Island (Puerto Rico), and the Farallon De Medinilla (near Guam). These ranges are the only U.S.-owned locations on the east and west coasts and in the western Pacific where both Naval Surface Fire Support and air-to-ground training operations can be conducted using live ordnance. Regulatory constraints at these ranges principally concern compliance with the National Environmental Policy Act (NEPA), ESA, and the Migratory Bird Treaty Act.

The range and OPAREA at San Clemente Island accommodate Naval Surface Fire Support, air-to-ground ordnance delivery operations, and special operations. The United States owns the entire island. Its location near San Diego is critical for efficient use of training dollars, and is the only ship-to-shore range left in the eastern Pacific. San Clemente Island is also home to the most endangered bird in the U.S.—the San Clemente Island Loggerhead Shrike. We are spending \$2.5 million annually for the protection of 42 birds in the wild and 64 birds in a captive breeding population. The population had been as low as 13 birds. The birds' breeding season results in restrictions being placed on shore bombardment exercises, as well as other types of otherwise authorized ordnance delivery between February and June, and during the fire season between June and October.

The beaches at the Vieques Inner Range are used by nesting sea turtles. Navy's practice has been to relocate turtle eggs during amphibious landings and other military exercises on the Inner Range. In 1991, Navy built a sea turtle hatchery on Vieques to incubate relocated eggs. As a result, over 17,000 hawksbill and leatherback sea turtle eggs have been successfully hatched and introduced into the environment. During formal consultations under Section 7 of the ESA, we agreed to institute precautionary conservation measures not previously employed. In response, the USFWS issued the favorable Biological Opinion we needed to conduct pre-deployment battle group certification exercises in conformance with the requirements of the ESA. These precautionary measures included: (1) limited night-time use of inert ordnance on the range to 60 minutes total or only 10 percent of total Naval Surface Fire Support (NSFS) firing and 30 percent of total bombing allowed during night-time; (2) forbade use of illumination rounds after 11 p.m. with a 60-minute maximum total time of illumination per night (including naval and aircraft dropped flares, artillery and mortars over both water and land); (3) required constant aerial

surveillance of the range and surrounding waters by certified biologists during the day; and (4) halted the entire training exercise for a Carrier Battle Group in the event of observing a single sea turtle either on the range or within 1,000 yards of shore. The total cost for compliance with these requirements during Composite Training Unit Exercises, Joint Task Force Exercises, and Supporting Arms Coordination Exercises was approximately \$300,000 per exercise. This was in spite of the fact that our aggressive conservation program led directly to increases in the turtle population on Navy beaches at Vieques while we conducted continuous training operations from 1942 onward in the absence of these precautionary measures. In fact, the sea turtle population inhabiting Navy beaches has grown at a faster rate than sea turtle populations inhabiting public beaches on Puerto Rico.

The Farallon de Medinilla (FDM) Target Range, located near Guam, is leased from the Government of the Commonwealth of the Marianas, and is the only U.S.-controlled live-fire range in the western Pacific. It supports, on average, two to three unit level training evolutions and one large-scale exercise per year for the air wing of our Yokosuka, Japan based forward-deployed naval forces. FDM is the only target range for supporting large-scale exercises such as the Strike Fighter Advanced Readiness Program. Normally conducted at the Fallon, Nevada Strike Fighter Training Complex (Naval Air Station, Fallon), FDM facilitates this mandatory training without the necessity for squadrons to depart the Western Pacific Theater.

These SEVENTH Fleet forces must be maintained at the highest readiness levels, and without access to live-fire training, the air wing would degrade to "unready" within 6 months. The FDM range is home to several species of migratory seabirds and two endangered species. Continued use of the island by these birds, and supporting population survey data, indicates that our training activities have not had a significant effect on the birds. Nevertheless, a complaint was filed in DC District Court in December 2000 to stop our use of FDM as a bombing range. The lawsuit asserts that the provisions of the 1918 Migratory Bird Treaty Act apply to military operations. Plaintiffs have indicated that should they win this lawsuit, they will attempt to enjoin other DOD live-fire areas where migratory birds are present.

Our use of military ranges over the years has resulted in the presence of unexploded ordnance (UXO). In the past, we addressed UXO on active/inactive ranges by performing surface sweeps (pickup of UXO on surface), posting warnings, and fencing, if necessary. There is increasing pressure to regulate UXO on ranges more stringently than in the past. We are committed to ensuring that active range operations do not present a threat to human health or the environment off-range and see no compelling reason to regulate munitions when used on range for their intended purpose.

Regional air quality requirements have threatened to encroach upon our research, development, test, and evaluation ranges. For example, in the Los Angeles-Long Beach, California, area, federal and state regulators proposed moving the commercial shipping channel farther offshore to reduce emissions from commercial shipping activity. This proposed offshore route would have routed commercial traffic (approximately 5,000 commercial ships per year or one every 3 hours) through the middle of the Sea Range operated by the Naval Air Warfare Center, Weapons Division Point Mugu (California), severely restricting use. The Sea Range is a principal test and evaluation facility for airborne and naval surface weapons systems and is one of the most extensively instrumented large-scale sea ranges in the world. The Fleet uses this range for weapons firing exercises, including air-to-air, air-to-surface, and subsurface weapons, as well as bombs, mines, and guns.

To avoid losing the capabilities of this valuable resource, Navy initiated a multi-year scientific effort that concluded that the offshore route did not significantly reduce emissions in the onshore areas of concern, and identified other reduction strategies, such as slowing commercial vessels in the existing channel, that provided better solutions for improving air quality. While the regulatory decision making process is still ongoing, we are optimistic that a final resolution can be reached.

2. Testing and Training Operations Using Sonar and Explosive Sound Devices—A study by the Naval Studies Board of the National Research Council (1997) estimated that in 1997 there were nearly 200 diesel-electric submarines owned by the navies of potentially unfriendly countries, with more on order. Hostile diesel-electric submarines operating in the littoral zones possess tactical characteristics that are extremely difficult to counter—stealth and lethality. The shallow sea-bed in the littorals can interfere with many available antisubmarine detection methods.

The serious safety and mission threat posed by the presence of quiet, hostile submarines makes it essential for us to conduct antisubmarine warfare (ASW) training operations. This training requires the activation of sonars that are under increasing scrutiny. The current MMPA definition of what constitutes a "take" allows interest groups to assert that nearly any response by a marine mammal is evidence of har-

assessment, thus triggering regulatory oversight. Assessing the effects of active sonar operations during ASW training is difficult because existing technology and science is limited. Therefore, we have invested \$18 million in marine mammal research that will ultimately benefit the entire nation. Until we have the results of this research, we will be forced to use analytical data very conservatively when assessing the potential impacts of our actions on the environment.

Despite our conservative approach in assessing marine mammal impacts, developing mitigation that satisfies regulators as well as environmental activists has become increasingly challenging with significant impacts on maritime sustainability. While the environmental rewards are unclear, the readiness impacts are real. For example, we are often advised that visual monitoring is essential when acoustic operations are conducted. Because visual monitoring is not possible at night, continuation of such training is threatened.

The use of explosives in test or training activities is considered by regulators to imply, almost always, that an animal could be injured or killed. For example, during the Littoral Warfare Advanced Development 00-2 Sea Test (May 2000), sponsored by the Office of Naval Research, NOAA Fisheries denied us use of SUS (Signals, Underwater Sound) charges containing about two pounds net explosive weight. SUS charges, an important element to the planned test program, are routinely employed in collecting environmental data, and release relatively negligible sound in the water. Upon the direction of the regulators, concerns about the mere presence of whales during this test resulted in cancellation of all our active acoustic transmissions, including use of sonar. Based on this experience, in addition to other discussions and correspondence with regulators, we anticipate that weapons systems that employ larger net weight explosives will face challenges in use during training operations.

Moreover, the possibility exists that all of our at-sea testing, training, and exercises that use active acoustic devices (e.g., standard ship sonars), ordnance, or any other device or practice that could "affect" protected species, will be required to obtain incidental take statements under the ESA, and/or Incidental Harassment Authorizations/Letters of Authorizations (IHA/LOA) under MMPA. Obtaining these authorizations is a lengthy process, requiring substantial investment in supporting data collection, and is good for a limited time only (1 to 5 years for an IHA and LOA, respectively). In addition, a rigorous public process is involved under the MMPA. Costs for routine training are likely to increase dramatically due to mitigation requirements, such as continuous aerial surveys, additional spotters, and delay. None of these practices allow us to train as we fight. Night-time training and training in high sea states will decrease because of limited visual capability for spotting marine mammals. All of these could result in significant degradation in readiness.

Obtaining authorizations is costly, both in terms of time and money, with a consequent impact on readiness. For example, the \$350 million Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA) Sonar Operations (SURTASS LFA) sonar, an anti-submarine sensor system, already in use by Russia and France, has not been deployed despite the positive results of a 2-year Navy-funded research project demonstrating the environmental compliance of the system. There have been at least four lawsuits challenging the conduct of marine mammal research with SURTASS LFA sonar in the Hawaiian Islands. To date, we have expended over \$10 million in the collection of data and the preparation of a worldwide Environmental Impact Statement (EIS). We have engaged reputable marine mammal scientists nominated by the Natural Resources Defense Council to act as independent advisors and have included substantial mitigation in the deployment plan. Deployment of the system is still uncertain because of the likelihood of lawsuits, the non-concurrence of the California Coastal Commission, and NOAA Fisheries' unwillingness to provide a "take" permit for a large area of the eastern Pacific until California Coastal Commission concurrence is obtained.

3. Basing and Installations—Endangered Species—Under ESA, federal agencies are directed to use their authority to assist in recovering species in the course of carrying out their actions. Moreover, critical habitat may be designated on our land even if we have in place conservation programs with a proven track record of success, evidenced by the number of threatened and endangered species recovering on our lands. Because the ESA process does not recognize our extremely successful efforts to protect listed species, our ability to manage and use our ranges while effectively protecting natural resources is limited.

The 1999 designation of critical habitat for the Western Snowy Plover on the training beaches at Naval Amphibious Base (NAB) Coronado, California is having a significant impact on training. Marines use these beaches for landings and SEALs use them for warfare training. This area was designated as critical habitat in part because of the increasing numbers of Snowy Plover nest identified during the breed-

ing season. The bird population increased despite annual training because of our conservation program, which includes marking off new nesting areas. During nesting season, from mid-March to mid-October each year, training space is reduced by about 40 percent. As the growth in nesting pairs continues under our conservation program, the amount of beach available for training will be correspondingly and continuously reduced. At the rate these birds are proliferating some training operations on the beach may have to be cancelled to avoid violating ESA requirements.

Air Pollution—The Clean Air Act (CAA) General Conformity rule has had moderate impacts on Navy training and readiness. The conformity rule applies to areas that have not or only recently attained the National Ambient Air Quality Standards (NAAQS). This rule requires that the Navy analyze air emissions for any proposed new or significant change in operations at a facility located in one of these areas. If emissions would exceed specified thresholds, the increase must be offset by emission reductions elsewhere or included into the state emissions budget. The federal CAA prohibits proposed actions if the increase cannot be offset. To ensure emissions do not exceed the specific thresholds, mitigation is often imposed that may limit training locations, frequency, or methods.

Aircraft emissions have posed the biggest conformity problems. The type and tempo of aircraft operations have not been impacted to date, but significant funding and manpower has been required in many instances to demonstrate conformity. Compliance with the Conformity Rule often requires that state or local regulatory agencies work with the military to obtain an emission budget or offsets from other emitters. Conformity requirements have the potential to limit our basing options as competition for air emissions budgets and offsets increases. The conformity rule could prevent completion of training or test events originally planned.

Conformity was a challenge when the F/A-18E/F Super Hornet was introduced into the fleet at Naval Air Station (NAS) Lemoore, California in 1998. The aircraft would not be allowed to operate at Lemoore without an offset of over three hundred tons of nitrogen oxide emissions. We were finally able to obtain the necessary offsets from the Federal Aviation Administration. The necessary offsets existed only due to the closure of the former Castle Air Force Base within the same air district. Conformity was also a challenge in the realignment of F/A-18C/D fighter aircraft from NAS Cecil Field, Florida to NAS Oceana, Virginia in 1998. The Commonwealth of Virginia provided an increase in the emission budget for NAS Oceana to allow the F/A-18C/Ds to relocate. The ability to home base aircraft at desired locations is highly dependent upon other federal and state agencies.

Noise—Airborne noise from the operation of weapons systems is one of the most noticeable consequences of military readiness. Noise is a multi-dimensional issue that includes impacts related to pitch, frequency of occurrence, steady state vs impulse, time of day, weather, terrain, and weapon system employment (e.g., high altitude flight versus low altitude). The public's perception of noise can influence how we use our training areas. No longer is noise just an issue in urban areas such as Virginia Beach, Virginia; it is equally at issue on relatively isolated ranges on the west coast, such as at Naval Air Station, Fallon, Nevada. Noise has long been an issue at military installations and has more recently become significant for planning military training routes (low level) and test and training flights.

Future aircraft such as the Joint Strike Fighter (JSF) employ new engine technology, advanced design, and flight controls such as thrust vectoring, all of which can affect the noise characteristics of the aircraft. With these innovations, initial noise data indicates that these aircraft may be slightly noisier than the legacy aircraft they are replacing. The advent of new weapons, tactics, and training requirements, coupled with increased urban development and efforts to protect the environment and natural resources, have contributed to the rise in opposition to military training at ranges throughout the United States.

Base Realignment and Closure (BRAC) actions have resulted in closure of major installations, narrowing our options for training in support of tactical aircraft operations. New training requirements that include high-altitude bombing and stand-off weapons have become significant challenges for the future. As a result of BRAC 95, Navy relocated F/A-18C/D squadrons from NAS Cecil Field, Florida to NAS Oceana, Virginia, requiring the squadrons to shift training to ranges in North Carolina and areas around Oceana with an attendant rise in noise complaints.

The rise in noise complaints in urban areas, as well as an increase in concerns voiced about aircraft noise in rural areas and parks from hikers and others engaged in outdoor activities, is restricting the areas where we can base and train. For example, a proposal to expand the use of an air-to-ground target at an existing Army range at Fort Hunter-Liggett met significant resistance from local groups, despite the fact that the range is in a sparsely populated area of California. Noise impacts to surrounding natural and recreation areas have been cited as the critical issue.

As we regroup to mitigate the potential result of decreased operations at Vieques, other critical training ranges such as Pinecastle (Ocala National Forest, Florida) and the eastern North Carolina ranges on Pamlico Sound have come under serious scrutiny, despite the fact that both are located in sparsely populated areas. At the live-fire Pinecastle range, local groups have asked that we cease bombing operations. The existing operating permit issued by the U.S. Forest Service expires in July 2001 and we are presently conducting an Environmental Impact Statement to address our future range requirements. Proposed military operating areas over Cape Lookout and Cape Hatteras National Seashores at altitudes of 3,000 feet have raised National Park Service concerns regarding aircraft overflights enroute to the bombing ranges in Pamlico Sound. The National Park Service's focus is on how aircraft overflights will affect park soundscapes in the context of protecting natural quiet.

Complaints from local citizens at Vieques about noise from Carrier Battle Group training (air-surface-underwater), as well as other issues, has led to a decision to forego the use of Vieques for a significant training event for a Carrier Battle Group earlier this month.

We are supporting a joint plan that calls for the development of a unified DOD noise program to address the wide range of noise issues facing the services.

Airspace—As airspace needs change with the evolution of new weapons systems and tactics, the drastic increase in civilian aviation traffic, compounded by urban sprawl, remains a continued threat to the retention of current airspace assets and the expansion of those assets. Scheduling/using agencies of Special Use Airspace delegated to Navy by the Federal Aviation Administration continually evaluate this resource to assure that it is properly sized, both vertically and laterally, to support the mission for which it was designed. Navy currently has three proposals at FAA headquarters for approval and a small number of proposals in the early stage of development. Preliminary discussions suggest that these proposals, if properly documented, have an excellent chance for approval. To facilitate continued interagency cooperation, we continue to expend a considerable amount of time in cultivating relationships with senior FAA officials in Washington Headquarters and the Regional Offices.

III. ONGOING ACTIONS

A. Maritime Sustainability Actions—As the DOD Executive Agent for maritime sustainability, Navy is basing its actions on a four-pillar strategy. The four pillars are: sound legal position; knowledge superiority; policy and procedures; and education and engagement.

We and the other Services must operate from a sound legal position—we must comply with the law. We should be the experts in the subject area in order to ensure that well-informed decisions are made as to the “how, when, and where” during the planning of training and testing. DOD needs policies and procedures that provide consistency in environmental documentation and ensures that decisions are based on the best available science. Lastly, DOD not only must engage the public and regulators to ensure that they are provided with knowledge necessary to understand DOD's different roles in National Security, but also its role in promoting global stability and democratic ideals. In addition, DOD must educate its officers and service personnel on all issues associated with maritime operations at sea and the marine environment to ensure environmental stewardship across the Department.

The development of the four-pillar strategy began with an effort to assess the effects of sound on marine mammals. This effort was initiated almost one year ago to address the ambiguity of the definition of “harassment” in the MMPA. It has expanded from a one-issue initiative into a four-pillar strategy. The overall goal of the maritime sustainability initiative is to achieve sustainable readiness in congruence with the statutory and regulatory framework mentioned earlier in my testimony. This strategy also provides for a proactive engagement policy with the regulators, the general public, environmental groups, Congress, and service personnel.

Following are additional examples of actions we are conducting, categorized under each of the four-pillars of our maritime sustainability strategy.

1. Sound Legal Position

Preparation of Range EISs—In 1996, we initiated preparation of EISs to cover range activities. Range EISs have been prepared and Records of Decision issued for range activities at the Pacific Missile Range Facility (Hawaii), Naval Air Station Fallon (Nevada), and Naval Air Station Patuxent River (Maryland). We also completed an Environmental Review for the Atlantic Undersea Test and Evaluation Center (Bahamas). EISs are ongoing for range activities at Naval Air Weapons Station China Lake (California), Naval Air Warfare Center Weapons Division Point

Mugu Sea Range (California), San Clemente Island Ranges and Operating Areas, the East Coast Shallow Water Training Range, and the Pinecastle Bombing Range (Florida). We completed an EIS for operations at the Vieques Inner Range in 1980, and more recently completed an Environmental Assessment that evaluates the impacts associated with the more limited use anticipated as result of the agreement reached between the President and Governor of Puerto Rico.

Legislative Action—Last year, NOAA Fisheries, FWS and the Marine Mammal Commission were engaged in a process to develop a comprehensive legislative proposal to reauthorize and amend the MMPA. We worked within that process in partnership with these agencies to reach consensus on an amendment to the definition of “harassment” that would provide more certainty to the regulated public while ensuring that actions harmful to marine mammals would be addressed. The comprehensive legislative proposal was submitted to, and approved by, OMB and subsequently transmitted to the House and the Senate.

2. Knowledge Superiority

Digital Environmental Information Management System (EIMS)—We are developing a Geographic Information System-based EIMS to enhance the access to environmental data and information on the marine environment. Its goal is to support operational planners in determining time and locations for exercises to avoid environmental impacts. EIMS is in the initial phase of system prototype development. It will be demonstrated and validated for a Joint Task Force Exercise in the Virginia Capes and Cherry Points OPAREAs.

RDT&E Actions—Our current research seeks to increase the level of knowledge of marine mammal population densities, distribution, and hearing. The Living Marine Resources Information System Phase I is being evaluated for use as a basis for archiving these distribution data for use by operational planners. The first objective is to cover high priority areas (East and West Coast operating areas and training ranges), with worldwide operational coverage as the ultimate goal.

Understanding the effects of our operations on marine mammals and sea turtles is critical to our proactive approach for interacting with marine mammals (e.g., how do sonars and explosions affect them and how can scientifically-defensible effects/thresholds be defined). The Office of Naval Research has developed a 5-Year Science & Technology objective to ensure that research will provide vitally needed answers to determine if the budget should be increased to accelerate data output.

Coral Reefs—We are the DOD Executive Agent on the Coral Reef Task Force and have led the development of DOD’s Coral Reef Protection Implementation Plan. This document creates awareness of the need for coral reef protection and outlines procedures for the military to follow to ensure safe and environmentally responsible operations in and around coral reefs. In addition, we created artificial reefs off Oahu, Hawaii to increase the size of Hawaii’s reef habitat in support of our obligations under the Executive order.

3. Policy and Procedures

Navy At-Sea Policy—We developed an At Sea Policy to promote consistent application of legal requirements Navy-wide. The Under Secretary of the Navy signed the policy on December 28, 2000.

Enhanced Readiness Teams—Both CINCPACFLT and CINCLANTFLT have established Enhanced Readiness Teams at Fleet Headquarters and within each of their respective regions. These teams bring together operations, facilities, legal, public affairs, real estate, and environmental staffs to address encroachment issues across the broad spectrum of affected areas. Enhanced Readiness Team efforts include active engagement with regulators and other non-DOD agencies to ensure readiness is maintained through long-term access and use of Fleet facilities, training ranges, and OPAREAs.

Standard Operating Procedures/Acquisition Policy—We are moving forward to: (1) develop standard operating procedures for ship operators and operational planners; and (2) develop guidance for acquisition managers to assess and mitigate potential impacts on marine mammals/endangered species. Efforts are underway to achieve both these goals.

Environmental Analysis Methodologies—We are seeking to maintain consistent approaches in preparing environmental analyses of marine mammal/endangered species effects in all of our NEPA and EO 12114 documents. We are developing scientifically defensible methodologies for assessing the effect of specific incoherent (impulsive) and tonal-acoustic sources on marine mammals and incorporating them into a single guidance document or methodology “cookbook.” The initial focus of this effort is on the effects of explosives in deep and shallow water and in the surf zone. Methodology development will transition into “clear zone” charts for various sizes

of ordnance. Future efforts will focus on: (1) short duration coherent pings by operating system/frequency (low, medium, high) and (2) continuous sound by operating system/frequency (low, medium, high).

Compliance and Mitigation—We have contracted with the Center for Naval Analysis to determine the effect of compliance with regulator-recommended mitigation procedures on our resources (time and cost) and operations (training benefits).

4. Education and Engagement

Navy/NOAA Fisheries Environmental Coordinating Group—We worked with NOAA to establish a forum for coordinating and discussing mutual issues. The major focus of the group is to establish processes and procedures between the two organizations to ensure consistent regulatory interpretation and application by NOAA Fisheries regional centers to our environmental documentation.

Navy/NOAA Fisheries Liaison Office—As a direct result of the above Environmental Coordinating Group, we established a liaison office at NOAA-Fisheries headquarters. The mission of the office is to provide a permanent position to actively engage in current and emerging policy issues affecting Navy and NOAA-Fisheries.

National Marine Sanctuaries Advisory Liaison—One of our representatives currently serves on the advisory committee for the Channel Islands National Marine Sanctuary (CINMS) and is providing input to the regulatory process involving the expansion of CINMS, which encompasses part of the Point Mugu Sea Range.

Public Affairs Outreach—We are developing a pro-active outreach effort with four goals: informing, responding, clarifying, and coordinating. To meet the goal to “inform,” we are currently developing informational tools highlighting the importance of sustained readiness and how we address environmental considerations. In order to improve our timeliness and accuracy in responding media inquiries, the group has proposed developing a response action plan. Ensuring that we convey a consistent message at all levels in all places by clarifying the message and coordinating responses is the culmination of the program. Planned action in this area includes developing complete press kits (web site, video, Public Affairs Office brochure and media-training kits for our personnel).

Training Videos—We developed three marine mammal training videos to educate and sensitize our personnel on their environmental protection responsibilities while at sea. Two videos focus on Right Whale identification and critical habitat areas encountered during normal operations on the east coast of the U.S. They address procedures to avoid endangering the Right Whale including: early warning system, watchstanding, lookout training, ship maneuvering, and avoidance distances for underwater explosives or exercise ordnance.

Senior Operator/Regulator Dialogue—Last September, Navy hosted a full-day meeting to address the challenge of protecting both national security and environmental values. The dialogue included senior representatives from the federal regulatory community (FWS, NOAA Fisheries, EPA, Council on Environmental Quality, and senior defense leaders (Commander, Second Fleet; Commander, Third Fleet; Assistant Secretary of the Navy (Installations and Environment); General Counsel of the Navy; Deputy Chief of Naval Operations (Fleet Readiness and Logistics). All participants agreed with the position that there needs to be the appropriate balance between the two national imperatives of national defense/national security and protection of the environment. Nevertheless, the responsibility is on the Navy to comply with the laws.

B. Actions in Other Encroachment Areas

1. Noise—Through recommendations approved by the DOD Senior Readiness Oversight Council (SROC), we are working with other Service components to establish a DOD noise program to address on-going noise issues, including noise impacts, and its effects on the local population, wildlife, and structures. Through the Range Air Installation Compatible Use Zones (RAICUZ) and Joint Land Use Study programs, we are proactively working with local and state officials to mitigate a variety of encroachment issues, including urban growth and noise, through effective planning.

In 1998, we established RAICUZ program to develop range encroachment plans, identify long-term range requirements, and to coordinate with local, state, and other federal government agencies to address range encroachment and maintain the basic or core training range capacity needed to support operational readiness. Studies have either been completed or are in progress for ranges at Fallon, Nevada; El Centro, California; Dare County, North Carolina; Pinecastle, Florida; and Vieques, Puerto Rico.

IV. SOLUTIONS

Our ability to meet our Title 10 obligation to maintain ready maritime forces is increasingly challenged by legal requirements. We believe that some of these laws and regulations are ambiguous and inflexible, and were drafted without due consideration for national defense missions. Compliance, therefore, becomes increasingly difficult as we struggle to define and interpret the standards with which we must comply.

We are not seeking an outright exemption from existing laws. We are proud of our record of stewardship and intend to continue to comply with the law. Rather, we will work with the administration and Congress to address steps to reduce uncertainty and increase flexibility in the law to balance the needs of the environment with national security. We have worked closely with other federal agencies in an attempt to achieve full mission readiness and fulfill our environmental stewardship responsibilities.

- Partnership with NOAA Fisheries, FWS, and the Marine Mammal Commission to draft a legislative proposal to reauthorize the MMPA, including an amendment to the definition of "harassment." This reauthorization proposal was jointly submitted to the last session of Congress.

The amended definition of "harassment" would accomplish three goals. First, it reiterates the protection against acts that injure or have the significant potential to injure marine mammals in the wild; second, it establishes a clear, unambiguous legal standard, founded upon scientific assessment, to regulate acts that disrupt natural behavior patterns to the point where such patterns are abandoned or significantly altered, and third, it provides a statutory basis to regulate acts directed toward specific marine mammals in the wild, when such acts are likely to disturb by disrupting behavior, including migration, surfacing, nursing, breeding, feeding, or sheltering.

- Partnership with FWS to ensure that Integrated Natural Resources Management Plans (INRMPs), prepared under the Sikes Act will effectively manage the long term conservation of endangered species and thereby obviate the need to designate critical habitat.

Finally, we must train out of our deepest obligation to the American people who provide their sons, daughters, brothers, sisters, husbands, and wives to defend the nation. We must also train in harmony with the environment where possible. We must determine an appropriate balance between environmental protection and mission readiness. We look forward to working with the administration, Congress, and other federal agencies to achieve our dual goals of national defense and environmental protection.

Senator INHOFE. Thank you, Admiral. I appreciate your ending it that way, because people do not realize we are talking about human lives here. Many of the deployments we have will be exposed to a combat environment as soon as they arrive, and people do not understand that. Thank you very much.

General Van Antwerp.

**STATEMENT OF MAJ. GEN. ROBERT L. VAN ANTWERP, JR., USA,
ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT;
ACCOMPANIED BY BRIG. GEN. WILLIAM G. WEBSTER,
USA, DIRECTOR OF TRAINING**

General VAN ANTWERP. Mr. Chairman, members of the committee, Senator Kennedy, I really appreciate the opportunity to come to talk to you today about encroachment issues and their effect on Army readiness. Before I go any further, I would like to just introduce a gentleman to my rear, General Webster, who is the Army's trainer. He is the Director of Training for the Army, and previously commanded the National Training Center at Fort Irwin, California.

There is no question that societal changes, demographics, and environmental issues are affecting our training and require new management approaches if we are going to be able to sustain our training readiness in the Army.

Our essential training focuses on two things, maneuver, both ground maneuver and air space maneuver for our aviation capabilities, and the live-fire training both in more of a static mode where we are qualifying and getting proficient on our weapons, but also in live-fire maneuvers. This requires land. It requires land that can provide challenging, realistic scenarios, and allow soldiers and units to train like we expect them to fight.

The old axiom that we will fight like we train is true, but we also have to do the reversal of that, and we have to make sure that we can train like we fight.

Some suggest that increased use of simulations or simulators can fill this gap and can offset our reliance on live-fire training and maneuvers. The truth is that it can complement, but it cannot be a substitute. There is no substitute for live fire and maneuver.

If you have ever been to or observed in a live-fire exercise, and I have been on many of them through my career, when you give live ammunition, and you are going through a live maneuver exercise, there is a whole different factor built in once you put those weapons off of safe and you have ammunition. You are so much more alert as to your surroundings, how you run, how you hit the deck with your weapon, the whole aspect of live-fire. There is no substitute for it, and it cannot be replicated in any simulation.

The Army's primary concern on encroachment is basically separated into three sections, one is urban growth, the other is threatened and endangered species and their habitat, and the third is unexploded ordnance and its constituents. I will just talk very briefly about the three of those and their impact, and give a couple of examples.

Urban sprawl, or residential growth, includes mostly noise, air quality, and habitat. Most installations were once far from the public view when we first put them out there, and since then there has been a lot of movement from the urban areas.

It is something that is natural, and something that we think in many ways is beneficial. However, it has taken away a lot of the habitat out there, and has caused our installations to become islands of biodiversity and havens for endangered species. When this growth occurs, we become concerned about the restrictions.

Now, we go into the training areas, and the effects that these habitats have on our training. I will give a particular example. Fort Hood has about 200,000 acres of training ranges and maneuver land.

When looking at the Endangered Species Act, some species including the golden-cheeked warbler and the black-capped vireo, restricts about 74,000 of that 200,000 acres, about 38 percent. The Clean Water Act prohibits digging on Fort Hood's 128,000 acres of that 200,000 acres, and the Clean Air Act restricts smoke and pyrotechnics on about 46,000 acres. So what looks like maneuver land that you are able to do full scope training on, when you get down to the restrictions, almost as difficult to manage where you cannot do things as where you can. This is a huge challenge, and that can also be said for other installations.

At the same time we are committed to being a leader in the environmental stewardship, we have found that there are many gaps in scientific data needed to support informed decisions. These in-

clude what makes good habitat, what should be the ratio of habitat set aside, and what are stand-off distances. To be truthful, this is an inexact science today, and it needs much more research.

Finally, I will talk about our concerns with unexploded ordnance and its constituents. Most of this focuses on the future, and as Senator Kennedy mentioned, we have a serious issue at a Massachusetts Military Reservation. This is significant because a sole-source groundwater aquifer sits right underneath the Cape and affects the local populations around it. We have done studies of other installations and have found that other installations have all or a portion of the sole source groundwater aquifer for surrounding areas.

There are many other factors, however, that have to do with unexploded ordnance and their effects on the aquifer. These factors include soil conditions, depth of the aquifer, and the way the aquifer transmits the direction of its movement. All of those things have to be taken into consideration.

We are concerned, certainly, because the EPA felt obligated to administratively stop live-fire weapons firing. As Senator Kennedy said, there could and should have been much more outreach and community involvement before we got to that point. We are worried about the precedents that could be set if the Environmental Protection Agency or other regulatory agencies could administratively stop live-fire weapons firing while waiting for years of study to take place that will determine what the effects are. We have over 400 live-fire ranges in the Army.

The Army's approach to encroachment takes primarily two main avenues of approach, if you will. The first is to execute a sustainable range management plan, and I can talk more about that during the question and answer period; and the other is to look for buffer zones where they are practical and affordable.

We are working with the Nature Conservancy on buffer zones at Fort Bragg, North Carolina. They are in cofunding. We were able to obtain about 2,200 acres thus far, and we are working on more surrounding Fort Bragg. This becomes difficult because of the red-cockaded woodpeckers' presence. We are looking for habitat outside the fence line, if you will, in order to be able to train more effectively within the fence line, and also to provide the right habitat. They have obtained about 2,200 acres from willing sellers outside of the installation to create a buffer zone around Fort Bragg.

This all will require a partnership, as Senator Kennedy said, again, strong emphasis on outreach, on community involvement. It means partnership with our friends and neighbors who border on our installations. It means partnerships with other agencies, the regulatory agencies that have the ability to govern and to determine what are the areas that should be set aside for threatened and endangered species, and regulatory things. Finally, it means a partnership with you, a partnership with Congress to achieve balanced application of the environmental laws.

I believe there are ways to strike the right balance here, and that the military needs to be a strong steward of the environment, and we are committed to that. Both our vice chief and chief have said that we are not going to affect the drinking water of the American people, so we really have strong concerns that we do the right

thing. At the same time, as I said in opening, there is no alternative to having live-fire maneuvers.

So Mr. Chairman, members of the committee, Senator Kennedy, I would just like to thank you for the opportunity to make this opening statement, and I look forward to questions.

[The prepared statement of Major General Van Antwerp follows:]

PREPARED STATEMENT BY MAJ. GEN. ROBERT L. VAN ANTWERP, JR., USA

Mr. Chairman and members of the committee: Thank you for providing the Army with the opportunity to present our concerns about what has become known as "encroachment" to our training installations, ranges and land. This is a challenging issue. The fact that we are discussing it today demonstrates our recognition that societal changes, demographics, and environmental issues are affecting our way of training soldiers. The Army is implementing new management approaches in order to sustain readiness. The Army is not seeking to avoid any responsibilities it has to the people of the United States. We are not seeking relief from compliance with environmental statutes. We will continue to do our best to ensure that our practices do not endanger the health or well being of any American.

Our essential training focuses on weapons firing and ground maneuver, to include those aspects of maneuver that include our Army aviation capabilities. To practice and maintain proficiency in both of those areas, we require maneuver land and a variety of fixed firing ranges for everything from individual small arms to large caliber crew served weapons. Our important training installations all include a range "complex" that supports both live weapons firing and maneuver.

We have expended, and continue to expend, a great deal of effort and resources on both our range operations and modernization and on the environmental compliance requirements associated with them. In maintaining areas for training, we have isolated them from development and created islands of biodiversity and havens for unique natural and cultural resources that are found in very few other locations. However, we would ask those who seek to limit our essential training because of the presence of those resources to recall that it was our training and management practices that permitted these islands to exist in the first place and to flourish now in an environment that includes training activities ranging from maneuver to live-fire.

It has been suggested that increased use of simulations can offset our reliance on live weapons firing and maneuver training. We have made a significant investment in simulations; however, because of the extreme rigors and demands of ground operations, live experiential training will remain central to our training strategies. Most of the Army's investment in training goes to Operating Tempo (OPTEMPO) and Flying Hour Program (FHP) accounts that resource live training, an investment of some \$8 billion per year.

We ask that you recognize the unique role of the Army and our sister Services within the Department of Defense. We carry out our training, not for profit or gain, but to ensure the readiness of our force. That readiness is critical to our ability to perform the missions assigned to us and to do so efficiently and with a minimum of casualties. We have learned hard lessons in the past when other priorities overshadowed our need to train young Americans to face the uncompromising conditions and challenges of war. Unlike some other Federal agencies, the private sector cannot supplement the execution of our readiness requirements and missions.

As the Army continues its Transformation, we are mindful of the changing world and the imperative for the Army to remain a viable and effective part of the Defense team, to maintain a focus on readiness through training despite the many competing interests.

The Army's primary encroachment concerns are urban sprawl, threatened and endangered species, and restrictions that impact our use of munitions.

Urban sprawl and unchecked residential and community growth may present conflicts with our neighbors over noise, dust, and other effects of Army training. It sets off, in some places, a competition for natural resources. When our installations were established, they generally were in rural areas, remote and isolated from populations. That has changed. The sum effect has been that Army installations, once far from public view, are now often in the midst of large urban areas. Our training practices bring with them noise, dust, the expenditure of munitions, and ground activities that can be viewed as a nuisance and annoyance to those who have become our neighbors.

The management of endangered species in accordance with existing regulations has been, and continues to be, a great challenge. As a land based force, we need

land to train. Our important training installations are large and are needed to accommodate air and ground maneuver using our increasingly mobile weapons systems. Endangered species regulations have required us to review our training activities to ensure that they do not jeopardize the continued existence of an endangered or threatened species. In some cases, we must modify our training activities to meet that requirement. As the number of listed plants and animals increases, the amount of land available to us for unmodified training activities may decrease further.

Our concerns about munitions focus on the future. At one of our ranges, the Army National Guard's Massachusetts Military Reservation (MMR), we have encountered regulatory actions that impacted our operations. For the first time, the EPA has administratively stopped our live-fire weapons training based on their authority to abate imminent health and environmental hazards. Given the fact that our units employ a large number and type of weapons, and that we train with those weapons on literally thousands of ranges, the potential for cessation of live-fire training is of great concern to us. The potential impact of further administrative "cease fire" orders cannot be measured, other than to say that major training and training readiness investments would be affected. The regulation of munitions is a complex issue that requires deliberate measures in the areas of environmental research and development, risk assessment, range design, and range management. Unilateral orders to stop firing while we investigate these challenging issues will impact readiness. Although statutory and regulatory provisions allow for elevation of disputes between Executive Branch agencies where an administrative action affects training or a readiness activity in a manner that has or would have a significant adverse effect on military readiness, these extraordinary measures have been rarely invoked. We will work with Congress and the EPA to reduce uncertainty and increase flexibility in laws and regulations so as to balance the needs of national security and the environment.

Our approach to encroachment contains three key elements. First, we will respond to concerns at our closed and transferring ranges and perform the required response actions necessary to protect public health and safety. Second, we will introduce a more sophisticated, integrated approach to range management that we call Sustainable Range Management. This approach will allow us to better manage our lands and maximize their use for military purposes. Third, after appropriate review and discussion with affected parties, we may seek legislative clarification to achieve reasonable application of statutes as they impact our active ranges and live training. We believe Congress intended to afford us an opportunity to implement our management programs and to take the appropriate corrective action consistent with national defense needs and public health considerations. We believe it is unreasonable to stop vital readiness training just because issues are technically complex and require time to understand and implement effective responses. We will work with the regulatory community to engage in conflict resolution before resorting to unilateral administrative orders.

We are providing you with written testimony that expands on the following issues; our need for ranges and training land to support our live training, the evolving challenge of encroachment, examples of some of those challenges, what we are doing to meet the challenge, and what we would ask of Congress in this area. We have included some success stories such as Fort Bragg's leveraging of public and private resources by working with the U.S. Fish and Wildlife Service and The Nature Conservancy to acquire conservation easements from willing sellers off the installation. These easements allow for enhanced management of the red-cockaded woodpecker, an endangered species. The result is that Fort Bragg is able to lessen the restrictions on training while enabling the red-cockaded woodpecker to move closer to recovery. Expanding these partnerships, purchasing lands, securing easements, and transferring development rights will go a long way toward resolving our training encroachment problems.

MISSION NEEDS—WHY LIVE TRAINING AND TESTING IS IMPORTANT TO READINESS

The primary mission of the United States (U.S.) Army is to fight and win in armed conflict. Training soldiers, leaders, and units is the vital activity that ensures the readiness of the Army to accomplish this mission. To be effective, training must provide soldiers the opportunities to practice their skills in combat-like conditions. These conditions must be realistic, as well as physically and mentally challenging. The Army's training ranges, as well as those of our sister services, provide training opportunities to develop and improve a soldier's proficiency, competence, and confidence in the use of sophisticated weapons systems. The fact that the Army's mission increasingly includes peacekeeping operations does not reduce the need for combat training. In fact, "policing" requires soldiers to be highly proficient with pin-

point target identification and engagement procedures. This can only be accomplished by practicing with the actual weapon in specifically designed training exercises on our ranges and training areas dedicated to that purpose. Specialized peace-keeping training, however, cannot replace the basic emphasis on combat skills. Overwhelming evidence from the Army's Combat Training Centers proves that the teambuilding and weapons discipline skills developed for the Army's warfighting role are critical to success during operations other than war. The bottom line is that the Army's 21st century missions require at least as much live training as did past missions.

The amount of live-fire training in the Army cannot be reduced without serious degradation to readiness and the concurrent increased risk to American soldiers. The amount of live-fire training that individual soldiers and units are required to complete is based on the common sense premise that certain skills are perishable and must be periodically exercised. In other words, to be effective with a certain weapon system, the soldier must shoot a certain number of times. The Army has established standards that identify the minimum number of times and specific firing events that a soldier must train to achieve a given level of proficiency. The Army currently has difficulty meeting these minimum standards because of limited facilities, funding, and time. Many ranges currently operate at maximum capacity so that units can meet the minimum standards. Any further limitation on these training facilities would inevitably cause a reduction in live-fire training below that needed by soldiers to remain minimally proficient.

Some see the recent development of realistic computer games, which the Army calls simulations and simulators, as a viable substitute to live training. It is true that these technologies offer exciting new ways to train some aspects of modern soldiering; however, these virtual tools can only be viewed as an addition to live weapons firing and maneuver; never a replacement. To rely solely on simulations would be an injustice to the soldiers whom the Army has promised to train, and an abrogation of the responsibility that the Army is legally bound to perform.

Live training is critical to assessing the effectiveness and capability of not only the people but also the actual equipment that the Army depends on. The only way to ensure that a piece of equipment will be ready for battle is to put it through rigorous use beforehand. Weapons systems and vehicles, like the soldiers who count on them, must be tested and refined over and over to ensure quality and dependability.

THE EVOLUTION OF ARMY RANGES AND EMERGENCE OF "ENCROACHMENT"

Many Army ranges have been used for training with a wide variety of weapons systems for well over 100 years. The widely varied, historical usage of Army ranges has created environmental issues on these lands that leave them susceptible to enforcement actions based on an increasing number of health and safety concerns and increasing application, of environmental statutes. A number of these statutes contain enforcement triggers/thresholds that are based on the assessment of the environmental regulatory authority as to whether or not a given condition or activity presents a "potential" risk or "imminent" hazard to human health or natural resources.

For most of its history, the U.S. had no environmental legislation. Federal regulation to protect human health or the environment was unknown until the mid-20th century. During the 1950s and 60s, state and local governments had the responsibility for environmental problems. Only over the last 30 years has the U.S. begun to understand and regulate the potential environmental impacts of a wide variety of civil and industrial practices. During the 1970s, Federal legislation established rules for national environmental protection. Examples include the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), the Clean Air Act (CAA), Clean Water Act (CWA), and the Resource Conservation and Recovery Act of 1976 (RCRA). These laws have improved the quality of life for all Americans, including soldiers and their families.

In certain instances, some of these regulations were designed to minimize human health and environmental impacts associated with typical industrial operations (i.e., manufacturing, mining, refineries). Also during the 1970s, courts and Congress began granting citizens authority to challenge decisions involving environmental laws and to pressure agencies to implement directives. Liability for environmental harm was expanded in 1980 with the enactment of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). In 1992, Congress amended the Resource Conservation and Recovery Act (RCRA) to clarify that Federal agencies may be penalized for failure to comply with its provisions.

The Army has implemented programs to ensure compliance with these statutes. While we have been successful at managing endangered species, some of these actions have come at the expense of training capabilities at some installations. The environmental compliance programs on the ranges and training land of Fort Hood, Texas are an example of how such programs have restricted training capabilities. Fort Hood contains nearly 185,000 acres of ranges and training areas. Erosion control practices designed for compliance with the CWA prohibit digging on approximately 128,000 acres (69 percent) of training land. This means no digging for vehicle fighting positions, survivability positions, maneuver obstacles, or individual fighting positions, all of which are required to meet doctrinal training standards for many units on Fort Hood. The U.S. Fish and Wildlife Service's (FWS) biological opinion, issued under the ESA for both the Golden Cheeked Warbler and the Black Capped Vireo, restricts training on over 74,000 acres (38 percent) of training land. These restrictions include no digging, no tree or brush cutting, and no "habitat destruction" throughout the year on the entire core and non-core area. During March through August, vehicle and dismounted maneuver training is restricted to established trails, and halts in restricted areas are limited to 2 hours in designated endangered species "core areas" (55,000 acres of the 74,000 acres are designated "core areas"). Artillery firing, smoke generation, and chemical (riot control) grenades are prohibited within 100 meters of the boundaries of the designated "core areas." Use of camouflage netting and bivouac are prohibited across the entire "core area" during these months. Fort Hood's training areas contain over 2,400 (1,100 have been surveyed) archeological and culturally significant sites where digging is prohibited. The SHPO wishes to stop maneuver training on these sites. To comply with the CAA, there is no smoke, flare, chemical grenade, or pyrotechnic use allowed on over 46,000 acres (25 percent) of training land. Due to noise restrictions, there is no Multiple Launch Rocket System or artillery fire allowed on over 1,000 acres of land. These restrictions include only those driven by well-established and broadly applied environmental requirements. While some of these restrictions overlap on the same training areas, only about 17 percent of Fort Hood training lands are available for training without restriction.

The recent cessation of live-fire training at Massachusetts Military Reservation (MMR) leaves the Army very concerned that similar restrictions could occur at major live-fire training facilities such as Fort Hood. If applied to a major training installation, such as Fort Hood, the results could be catastrophic from both a fiscal and a readiness perspective. Army units at Fort Hood were authorized to fire approximately 35.4 million rounds of ammunition in FY01. Fort Hood contains some 33 small arms ranges, 24 major weapons ranges, and a number of separate field artillery and mortar firing points. The discretionary enforcement authorities granted under current environmental statutes leave many of these critical training assets susceptible to restrictions to training capacity. If applied, the Army would be forced to relocate training to other locations, construct new adequate ranges at those locations, and deploy Fort Hood soldiers to train off-site. These "work arounds" would be in addition to addressing the compliance requirements, which at MMR have cost some \$60 million on what is a relatively small (22,000 acres) installation. If applied to an installation such as Fort Hood, the impacts on the Army's budget, training efficiency, and soldier morale would be catastrophic.

Historically, the Army has chosen remote locations for its training land. Until the last 30 years, there was little residential or commercial development near these facilities and, as such, the public's awareness of live training activities was minimal. As the population in and around many U.S. cities has grown, ranges and training lands have remained insulated from the urban development (sprawl) that covered much of the landscape surrounding many Army installations. Ranges and training lands became "islands of biodiversity" and their value as natural resources (green spaces) increased. As population centers expanded to or near the installation boundary and residential areas grew in more remote, previously rural setting, citizens became more aware of training activities. The demographics of the residents near Army installations have also changed. The affluence born of the recent economic expansion has grown new suburban communities near Army installations. These new residents are less familiar with the sights and sounds of range and training activities. The impressions they formed of Army training were based on noise, smoke, a lack of access to what had become the most pristine natural landscapes in their regions and did not include an understanding of the benefits that Army training provides. In general, the U.S. citizenry is less likely to have personal military experience than they had 30 years ago.

The public also perceives a reduced national security threat since the fall of the Soviet Union, which further reduces the perceived value of live-fire testing and training activities. In fact, the rate of Army deployments is at an all time high.

More soldiers are consistently deployed (including the Army National Guard and Reserve) to more locations, more frequently, than ever before. At the same time, the Army's weapons systems and warfighting doctrine have increased the demand for training and testing ranges.

The effects of these encroachment factors are intensified by well-organized communities committed to the elimination of the military's impact on them. The effectiveness of these communities is enhanced by a system of environmental regulation that allows for discretionary enforcement and citizens' authority to challenge regulatory decisions, resulting in pressure on regulators to interpret environmental requirements most conservatively to avoid speculative effects or risk of litigation.

As the Army tries to "balance" its testing and training mission with its requirement to comply with environmental regulations and its desire to act as good stewards of the natural resources under our authority, we are pushing already severely constrained resources to the breaking point.

EFFECTS OF THE SENIOR READINESS OVERSIGHT COUNCIL (SROC) KEY ENCROACHMENT CATEGORIES ON ARMY RANGES

Today, we will discuss in some detail three of the areas raised by the SROC that impact the Army training most significantly. These are: Urban Growth; the ESA/Critical Habitat; and Unexploded Ordnance and Constituents. The Army's interests and concerns in other SROC areas of concern such as airborne noise and air quality are articulated in the oral and written testimony of our sister Services.

URBAN GROWTH

Most of the Army's major training installations were established during the World Wars, and they were both remote and isolated from populations. However, since then, many installations have experienced considerable urban growth around their boundaries and are now often in the midst of large urban areas. As the Army prepares for its mission by training and testing, we create noise, dust, and ground disturbances that can be viewed as a nuisance to those who have become our neighbors.

The challenge to the Army in maintaining its readiness to defend America's essential interests is to continue to train effectively in the context of these changing demographic conditions. Clearly, the Army is limited in its ability to acquire new land. Cost and the general public concerns about urbanization's effects on remaining natural and agricultural land make acquisition problematic. However, the Army's emerging weapons systems require more space to effectively exercise their capabilities within current doctrinal standards. This reduces our flexibility to use what land we have.

THREATENED AND ENDANGERED (T&E) SPECIES AND HABITAT

As we focus our training missions and transformation on specific installations, we find that endangered species regulations already limit the use of a significant portion of the landscape. Army lands host 153 federally listed species on 94 installations, and 12 installations have lands designated as critical habitat (four of these habitats are as yet unoccupied by the species for which designated). As the habitat of listed species is destroyed by development of lands adjacent to our installations, Army training activities on the habitat remaining are being restricted.

Let me offer a few examples of challenges we face with regard to T&E management.

The Red-Cockaded Woodpecker in the Southeast U.S. affects four major training installations (Forts Bragg, NC; Stewart, GA; Benning, GA; Polk, LA) and two major service school training bases (Forts Jackson, SC; and Gordon, GA). This single species has survived because of the havens provided by our installations' training land and ranges, which have been insulated from development and forestry practices in the region. The Army spends the resources necessary to help the recovery of the species while developers do not have to make similar commitments of resources.

The many listed plants in Hawaii and the complexities of complying with the ESA prevented the use of a valuable multi-purpose range built in 1988. We have also voluntarily closed our only large caliber firing range on Oahu—Makua Valley—while we review both NEPA and ESA management plans and agreements.

UNEXPLODED ORDNANCE AND OTHER CONSTITUENTS

When military munitions do not function as intended, or fully detonate, they create Unexploded Ordnance (UXO). Many challenges arise if and when the UXO is found on land to be used for something other than military testing or training. Land

no longer used for military testing and training includes former ranges being transferred to the public under the Base Realignment and Closure (BRAC) program, or ranges previously transferred out of military control and now being addressed under the Formerly Used Defense Sites (FUDS). When found on active and inactive military ranges, UXO poses fewer explosives safety hazards, since the Army still controls these lands and restricts access to the public.

When military munitions do function as intended, trace quantities of explosives constituents may be released into the air, soil, and water at the firing point and in the impact area of the range. These explosives constituents can pose an environmental challenge if present in large enough quantities, if the specific geophysical conditions are conducive to transport to the water sources, and if the environmental regulations at that location restrict the particular constituents being emitted. Range impact areas also become littered with metal scrap from the exploded munitions items.

The use of environmental statutes, such as CERCLA, RCRA, CWA, and the Safe Drinking Water Act (SDWA), to require investigation and cleanup of UXO and other constituents on active ranges could impact the Army's ability to fulfill its national security mission by causing the shut down or disruption of live-fire training. That vulnerability extends not only to the Army, but also to regulators themselves, who are vulnerable to citizen suits for not vigorously applying these and other environmental laws to unexploded ordnance and constituents on active ranges. While military activities are subject to regulations in the same manner and to the same extent as they apply to private activities, it is also clear that no private entity is responsible for national security or engages in the uniquely military activities necessary to support a standing Army that deploys worldwide.

In 1997, EPA Region I issued an Administrative Order (AO) under the Safe Drinking Water Act prohibiting the use of lead ammunition, propellants, explosives, and demolition materials at MMR. This action essentially shut down live-fire training at MMR except for use of plastic, frangible, and green ammunition. In October 1999, the Governor of Massachusetts issued an Executive Order designating the 15,000-acre training area as a Wildlife Refuge and Water Protection Area anticipating state legislation to implement the plan. Legislation did not pass, but we anticipate it will be reintroduced this year. Both the Executive Order and proposed legislation established a state commission, with no military representation, to determine what military training would be compatible with the area's new designation.

In January 2000, EPA Region I ordered a study to determine the feasibility of remediating UXO on the range impact area, stating that *all UXO is a potential threat to groundwater*. Although Royal Demolition Explosive (RDX) has been detected in the groundwater under the MMR impact area, there is no evidence that current drinking water supplies is affected. A fourth AO from EPA Region I directs the National Guard to employ a controlled detonation chamber, instead of detonation in place, to dispose of UXO or other munitions that have previously been disposed of by burial on the impact area.

To date, a couple of other Army installations have identified indications of contamination in the soil or groundwater stemming from possible munitions' constituents at active ranges. These installations include Fort Lewis, Washington and Aberdeen Proving Ground, Maryland. Although these incidents of constituent presence have not been significant enough to cause regulators to take action, there is concern that EPA actions at MMR could set a precedent for the agency to take similar steps elsewhere causing a cessation of critical training.

EPA's interpretation of the statutory requirements, the precedents being set by both state and Federal agencies with respect to munitions and UXO on active ranges, and the discovery of RDX in the sole source aquifer at MMR increase the Army's vulnerabilities in this area and present a broad risk to live-fire training and testing. This applies to installations located above sole source aquifers as well as installations located above any groundwater sources that regulators believe could be a current or future drinking water source.

THE ARMY'S ACTIONS

The Army's overall approach to range sustainability has three broad components. The first of these is Closed and Transferring Range response that is addressed later in this testimony. The second is the implementation of Sustainable Range Management. The last is Legislative Clarification that will be discussed at the end of this testimony.

SUSTAINABLE RANGE MANAGEMENT (SRM)

The creation of a Sustainable Range Management Program to integrate environmental compliance and stewardship, facilities management, and training management on ranges and training land is our primary initiative to meet the challenges of encroachment.

The Army is improving the way in which it designs, manages, and uses its ranges. This effort, which we call Sustainable Range Management, will help the Army maximize the capability, availability, and accessibility of its ranges and training land to meet doctrinal training requirements needed to support its Title 10 mission and ensure a trained and ready force.

The Army's sustainable range management effort is based upon three tenets: (1) Information Dominance: ensuring the Army has the most current and best information related to the operational and environmental characteristics of its ranges; (2) Integrated Management: ensuring that the major management functions that directly affect ranges, operations/training, facilities management, and environmental management are integrated to support the training mission; and (3) Outreach: ensuring that we articulate the Army's requirement for live-fire training to support national security and improving our understanding of the public's concern over the potential impacts of the live-fire training. The Army's current sustainable range management effort is broad and complex, and has as its basis the development of a comprehensive sustainable range management plan that we believe will ensure our ability to maintain and sustain our ranges and training lands well into the 21st century.

The Army has just completed the first phase of the plan, which identifies shortfalls (gaps) in current functions, policies, and procedures that could impede implementation of sustainable range management across all levels of the Army, from Headquarters, Department of the Army (HQDA) down to the over 400 installations with range assets. Doctrinally based core range requirements; those related to requirements for modernization of range facilities; services to support range operations; and maintenance requirements were analyzed against encroachment factors to gauge our vulnerability to external effects that will preclude our ability to support mission training requirements on our ranges. Based on that analysis, the Army has developed goals and objectives for sustainable range management and is currently drafting measures of merit for monitoring their effectiveness upon implementation. These goals and objectives for sustainable range management build upon our doctrinally based core range requirements and integrate them with mechanisms to minimize encroachment and the impacts of encroachment, reduce environmental liability through sound environmental stewardship and compliance, and provide outreach to the public. The goals and objectives form the basis for our comprehensive sustainable range management plan, which will evolve into a new Army training regulation.

As part of this effort, the Army is developing policies and procedures to correct the shortfalls identified during our initial analysis. We are developing integrated management strategies at the HQDA, Major Army Command, and installation levels to cut across functional lines in order to support the live-fire training mission and ensure our range capability into the future. Because Army ranges are a combination of training infrastructure, real property assets, and environmental resources, the integration of those management functions is vital to the success of this approach. To oversee this integrated approach and the comprehensive sustainable range management plan, the Army created the Army Range Sustainment Integration Council (ARSIC) in June 2000. The ARSIC is a HQDA level Council of Colonels that acts as an integration process team to support sustainable range management by developing recommendations for integrated policy, positions, and action plans.

The Army's ability to implement sustainable range management depends not only on its ability to meld the three management programs: training, facilities, and environment into a cohesive whole, but also on its ability to maintain accurate and up-to-date information and data related to the operational and environmental characteristics of our ranges, as well as the impact of munitions use on the environment. As part of this effort, HQDA has initiated a worldwide inventory of its active and inactive ranges. This inventory will provide a "ground-truth" baseline of the Army's extensive range infrastructure and provide the foundation for the comprehensive plan.

Sustainable Range Management will rely on the effective integration of the lessons learned, and varied environmental compliance programs and practices currently in place within the Army. Some examples of these follow.

LESSONS LEARNED AND COMPLIANCE PRACTICES FOR URBAN GROWTH

One of the most successful approaches to managing urban growth is the Joint Land Use Study (JLUS) program within the Office of the Secretary of Defense (OSD). This community and economic development program provides resources to communities, who, in conjunction with neighboring military installations, agree to undertake joint regional planning. Resources provide planning expertise. The result is a joint land use plan that provides optimal "zoning" recommendations to reduce civil-military friction resulting from urban growth.

Another Army initiative is the encouragement of land ownership partnerships with conservation groups with the objective of creating "buffers" around installations that will prevent development and fence line encroachment.

An excellent example of the creation of buffers is our Private Lands Initiative at Fort Bragg. In this initiative, the Army is partnering with The Nature Conservancy to develop buffers adjacent to the installation and training areas. While we may not need to "own" more land, it is clear that the Army must have access to more land.

LESSONS LEARNED AND COMPLIANCE PRACTICES FOR T&E SPECIES

HQDA has initiated a series of briefings and information meetings with FWS to better inform them about mission requirements and better understand FWS T&E species conservation objectives. Army policy states that ESA compliance requirements are "must fund." Endangered Species Management Plans and their implementation constitute the major focus of funding for ESA compliance requirements. The Army has completed endangered species surveys for 71 percent of its installations. The Army has initiated several studies on Species at Risk in order to conserve them before they require listing. Four Army employees serve on FWS Recovery Teams. New Army policy will enable installations to partner with neighbors for the acquisition of conservation easements off of the installation to meet installation management objectives; however, funds have not yet been programmed to support this initiative. Additionally, the Army and other military services are exploring how Sikes Act Integrated Natural Resource Management Plans (INRMP) might qualify as "special management" schemes such that installations with such plans would not require designation of critical habitat.

At Fort Bragg, we are leveraging public and private resources by working with the FWS and The Nature Conservancy to acquire conservation easements from willing sellers off the installation. These easements allow for enhanced management of the red-cockaded woodpecker, an endangered species. The result is that Fort Bragg is able to lessen the restrictions on training while enabling the red-cockaded woodpecker to move closer to recovery.

LESSONS LEARNED AND COMPLIANCE PRACTICES FOR UXO

It is essential that we respond to all UXO on our closed, transferred, and transferring ranges thus demonstrating to the public that the Army is accountable for its actions and will not knowingly harm the public or the environment.

A first step in accomplishing this was the completion of Phase I of the Army Range Inventory. When completed, the Army Range Inventory will collect key information about active and inactive (A/I) ranges and closed, transferred, and transferring (CTT) ranges. Phase I was a survey data call to all Army Major Commands requesting basic information (e.g., location, acreage, munitions fired) about all current and former ranges. It is being followed by field visits executed by the Corps of Engineers for Closed, Transferring, and Transferred (CTT) ranges, and by the Geographical Information Systems (GIS) Regional Support Centers under the Army's Integrated Training Area Management Program, for Active/Inactive (A/I) ranges. Phase I gave us a good estimate of the total amount of acreage for our ranges and some information on munitions expenditures. Completion of the follow-on phases of the inventory will provide a clearer picture of the Army's current range assets as well as a listing of former ranges. The complete inventory will help the Army prioritize and program for response actions at former ranges and develop sound active range management programs.

Proactive approaches the Army has taken to ensure the continued use of Army ranges include finalizing Army guidance for implementation of Department of Defense Directives (DODD) 4715.11 and 12, "Environmental and Explosives Safety Management on Department of Defense Active and Inactive Ranges Within/Outside the United States," promulgated in August 1999, and establishing the Range Sustainment General Officer Steering Committee (GOSC), chaired by the Vice Chief of Staff. The Army also founded the Army Range Sustainment Integration Council (ARSIC), a Council of Colonels, to work and integrate solutions to range and muni-

tions issues across operational, environmental, and installation management functional areas. This group is the proponent for the Army's emerging Sustainable Range Management Program.

Army leads the Office of the Secretary of Defense's Operational and Environmental Executive Steering Committee for Munitions (OEESCM), which was established to identify and address environmental, operational and explosives safety issues throughout the munitions lifecycle. The OEESCM, consisting of operator and environmental representatives from all the Services, as well as many other DOD organizations, has formulated a Munitions Action Plan (MAP). The MAP establishes an overall framework that identifies and defines significant initiatives that will improve DOD's practices and minimize environmental impacts across the full spectrum of the munitions life cycle.

The OEESCM created a work group to establish policy and guidance for the management of munitions scrap metal found on ranges. The final draft policy is in staffing and the implementing guidance document has been started. The OEESCM Range Response Subcommittee, which has spent the last 2 years working with EPA, states, and other stakeholders to develop a Range Rule, is working to publish a DOD Directive that builds on that earlier effort.

As part of its outreach efforts, MMR is implementing a UXO Safety Education program for residents on and around the Reservation. The program includes educational videos, handouts, presentations, and a website all developed with input and approval from the surrounding community. The intent of the program is to educate the community, especially young children, on the hazards of UXO and what to do if they think they have encountered UXO.

A key requirement to address potential encroachment is to develop and use the best information to support management and decision-making. The Army is looking into what is being emitted when munitions are fired, how munitions constituents behave when they are in the environment, what happens to UXO on the ranges, and the current conditions on our active ranges.

The Army's Range XXI program is beginning to answer these questions through a number of forward-looking environmental projects designed to support training and testing operations. It is planned and managed by a partnership between the Army's Operators, Materiel Developers, and Environmental, Safety, and Occupational Health professionals.

Range XXI's greatest success to date is the Green Ammunition initiative. Green ammunition contains lead-free bullets and uses less hazardous material in the manufacturing process. Green ammunition is a replacement for the standard service round and is an excellent example of the Army's proactive, integrated approach to managing environmental issues on Army ranges. Lead in ammunition projectiles can accumulate and concentrate in the soil in and around the target areas on our ranges, and this lead can migrate in certain types of soil. The first of this new ammunition is the 5.56 mm used in the M-16 family of rifles and the Squad Automatic Weapon. The formal Engineering Change Proposal was approved in March 2000, and the Army plans to produce 50 million rounds in this fiscal year. This Green Ammunition has enabled the National Guard units at MMR to resume the individual marksmanship training that is a key element of their readiness posture.

Another significant Range XXI effort is the ongoing Air Emissions Management Program. The objective of this program is to identify the true environmental impacts of smoke, pyrotechnics, and high explosives during both training and combat operations. The Army Environmental Center, in cooperation with the Center for Health Promotion and Preventive Medicine, is collecting this essential data.

The Army will be performing a number of regional studies to assess the environmental conditions of a number of its ranges to begin to understand the degree of contamination, if any, from its live-fire training activities. It is also evaluating the adequacy of the available data and scientific knowledge of explosives compounds to guide future Research, Development, Test, and Evaluation (RDT&E) and data gathering efforts. Other initiatives include designing small arms ranges to minimize erosion, employing shock absorbing concrete to provide reusable and safe backstops, and utilizing dust control technologies on tank trails and helicopter hover pads to reduce turbine engine maintenance costs.

The Army's Research, Development, Test, and Evaluation (RDT&E) program is addressing detection and remediation of UXO, the fate and effects of explosives, and identification of less toxic replacements for explosives.

The detection and remediation of UXO is one of the Army's most pressing environmental cleanup problems. The UXO characterization and remediation activities conducted at Army sites using currently available technology is extremely expensive and often yields unsatisfactory results, due mainly to the inability to discriminate between UXO and non-hazardous items. Field experience indicates that the over-

whelming majority of objects excavated in the course of a UXO remediation are found to be non-hazardous items. Advanced technology offers the potential to significantly reduce the Department's liability and safely and effectively cleanup land so it may be safely used for other activities.

The principal goal of the UXO remediation technology development effort is to produce more effective and efficient processes and procedures for reliable and cost effective environmental remediation. These technologies are currently not available in the commercial sector. Although almost all UXO remediation is done by contract to the commercial sector, that commercial sector does not have the resources required to develop the sophisticated technology needed to effectively remediate sites containing UXO. Without Army and DOD-wide investments, Army will not see significant advances.

MMR has afforded the Army a unique opportunity to analyze our past practices and to understand what needs to be done differently in the future. In order to maintain effective sustainable military operations and training, we must have community acceptance and support for military activities, including those military activities that affect public health and the environment. Environmental problems on our installations are problems for the entire surrounding community. Information on the conditions at our installations is readily available to the public and many of these people are technical experts and many wish to use this information to support anti-military objectives.

MMR had to change to address earlier community concerns. They began involving the entire community, not just the vocal critics, in decision-making at the earliest possible moment. All technical and training programs integrated a community outreach program component. They came to realize that the best technical solution might not always be the best community solution. They saw that additional staff with training in mediation, relationship-building, and outrage management was essential, and that information dominance was essential. However, a disturbing aspect of this collaboration is the expectation on the part of local citizens that they should have veto authority of individual training events or even tasks. This expectation is without sound basis in either environmental risk management or military training doctrine.

HOW CONGRESS CAN HELP THE ARMY WITH THE RANGE ENCROACHMENT ISSUE

Support and Resource—The Implementation of the Army's Sustainable Range Management Program.

SRM is the foundation for sustaining live training and the environment on our ranges. As we have in the past, we will continue to improve range operations, range modernization, state of the art land management, research on munitions effects and UXO management, and public outreach. Although final funding levels have not yet been established, we ask Congress to support this important program.

Support and Foster Cooperation Among Regulators and the Military in Ways That Emphasize the Need to Balance Military Readiness Concerns and Environmental Regulation.

The Army believes that Congress should continue to recognize that Army readiness is a positive societal good and a legal mandate. Defense of our nation is an important requirement that benefits all citizens. I believe there are ways to balance the needs of the military with the needs of the environment. Just as our Nation needs a well-trained military force, it also needs a healthy environment. In light of the Secretary's current strategic review, it would be premature to discuss specific proposals, but I look forward to working with other Federal agencies and Congress.

CLOSING

Mr. Chairman and members of the committee: Thank you for affording me the opportunity to testify before you today concerning an issue of great importance to the Army's future.

Senator INHOFE. Thank you very much, General.
General Hanlon.

STATEMENT OF MAJ. GEN. EDWARD HANLON, JR., USMC, COMMANDING GENERAL, CAMP PENDLETON, CALIFORNIA

General HANLON. Thank you very much, Mr. Chairman, members of the committee. Senator Kennedy, it is good seeing you

again, sir, and I am delighted to be here today to be a spokesman for the Marine Corps. Let me also point out that I have a couple of my colleagues here with me today. I would like to introduce Brig. Gen. Gordon Nash, who is Director of Operations Division, Headquarters Marine Corps, a former division commander, sir; and also Brig. Gen. (Select) Mike Lehnert, who is Director of Facilities, and also our expert on ranges and things of that sort.

I should point out to you, sir, that I am not stationed in the Washington, DC area. In fact, what makes me perhaps a little unique is that they brought me in from 2,500 miles away to come here and meet with you today. I am privileged to command Marine Corps Base Camp Pendleton, California, which we like to think is our premier amphibious training base on the West Coast. While I would be more than happy and can answer any questions about Camp Pendleton or our western bases, I will do my best today, Mr. Chairman, to answer any questions you may have about any of our bases and stations around the world in the Marine Corps.

It has been mentioned by a couple of my colleagues already, but I would just like to emphasize how important the issue of training is. As both my Navy and Army counterparts have said, it is a very underpinning, the very foundation of what we are about as marines. We have to be able to train. We believe very strongly that the training that we do must duplicate the complexity of the modern battlefield, whether that battlefield might be high-intensity conflict, or the other end of the spectrum in humanitarian operations. We must put our marines through the same kind of training environment that they would see in the real world.

The Marine Corps is our Nation's force in readiness, ready to go at a moment's notice. We do not have a lot of time to get ready when a crisis develops. We are built around what we refer to as the Marine Air-Ground Task Force, the MAGTF, and consequently we train at sea, we train from the sea, we train on land, and we train in the air. We use our integrated combined arms as part of the way we train and fight. Our training is continuous.

In fact, at Camp Pendleton, Mr. Chairman, I will tell you we are training out there about 360 days a year, not just marine units, but we also have Army Guard, Air Guard, Navy units that train there as well. In the almost 3 years that I have been privileged to command at Camp Pendleton, it has become more and more difficult for us to duplicate and replicate the stresses of the battlefield that I referred to.

The reason for that is the challenge we refer to today as encroachment. Encroachment which we can discuss during the course of the hearing today, sir, comes in many forms. But it is our belief that it is really the widespread urbanization which has had the impact, and which is the main cause for concern here at Camp Pendleton and many of the other bases. It is also the added weight of well-intentioned laws and regulations which Senator Akaka referred to when he mentioned the unintended consequences.

The fact is, many of these laws were passed for all the right reasons, but unfortunately they have become for various reasons a burden to us in our ability to do our Title 10 responsibilities in terms of training marines. Addressing these unintended con-

sequences is one of the main reasons I am here today, sir. We can discuss this in more detail.

My Army colleague mentioned the Endangered Species Act. What has happened from that act is that, of course, a number of court decisions have been made, and regulations as a result of those court decisions have provided some pretty substantial obstacles to guys like me responsible for training marines.

But there are other issues out there as well, sir. You referred to them as the frequency allocation issue, which I know you are going to have some hearings on later, air-space issues, noise concerns, and we can talk about those today if you like, but I am here today to really ask for your assistance.

Senator Kennedy, in your statement you mentioned in the case of Massachusetts, the need for partnership and to be able to work with the local communities. I want to assure all of you that we do that. We do work very hard at Camp Pendleton, not only working with our local governments and agencies, we work with the local regulatory offices, and we work with the state of California. In fact, we have very good initiatives underway right now with Sacramento. So I want you to know we are doing that. But I really believe that what we have come to is a point where Congress, of course, which passed all of these laws such as the Endangered Species Act and many others, for all the right reasons; you have also given us our Title 10 responsibilities to train the force. After 3 years of trying to work this at my level at Camp Pendleton, I have come to the personal conclusion we have come to the point where I think we simply need Congress in their wisdom to take a look at these laws that have been passed and see if there is not a way that we can find some way of clarifying them, and find some way that we would be better able to perform our Title 10 responsibilities.

It has been mentioned by my colleagues the fact that we are very proud of the way we take care of our land, and I really believe we do it as well as anybody. I would invite anybody to come to Camp Pendleton to see how we take care of our flora and fauna and all the other resources the Nation has given us. We are very proud of that, and we do a very superb job in maintaining what you have given us.

I am not here in any way to try to avoid or wiggle out of compliance with laws. That is not what this is all about. What this is all about from my perspective is to find a way to be able to find some clarification in some of these laws so that we will be better able to do our mission. We need your help to do that, Mr. Chairman.

I go back to my opening statement. What this is all about is our need to be able to train our marines and our sailors and our soldiers and our airmen as they would some day have to fight. We need to be able to duplicate or replicate the stresses they would have on the modern battlefield.

Like my Army colleague, I agree with what he said, I believe a balance is possible. I believe there is a way that reasonable men and women can find a way to make these environmental laws and their Title 10 responsibilities work together in such a way that we can meet all of our obligations.

Sir, that is all I have as far as an opening statement is concerned. I would be more than happy to answer any questions you may have.

[The prepared statement of Major General Hanlon follows:]

PREPARED STATEMENT BY MAJ. GEN. EDWARD HANLON, JR., USMC

INTRODUCTION

Chairman Inhofe, Senator Akaka, and distinguished members of the committee, it is my privilege to report on the effect encroachment is having on the readiness of your Marine Corps. On behalf of the Marine Corps, I want to thank the committee for its continued support. Your efforts reveal not only a commitment to ensuring the common defense, but also a genuine concern for the welfare of our marines and their families.

The tried and tested framework of the Marine Corps for 50 years has been the Marine Air Ground Task Force (MAGTF). The MAGTF is a flexible and mobile integration of air and ground forces, with supporting logistics and state-of-the-art command and control that has a proven rapid response capability. Its closely integrated elements, in partnership with the Navy, achieve the potent and battle-proven concept of Combined Arms Operations. It is how we must train; how we will go to war.

The MAGTF trains and deploys as a part of a Navy-Marine Corps team, with the Amphibious Ready and Carrier Battle Groups. The elements of these forward deployed naval forces need realistic and challenging training to effectively function as an integrated and cohesive team. MAGTF training must occur prior to deployment to be effective. Your marines and sailors must be ready for employment across the spectrum of conflict when they deploy.

Your marines' success on the battlefield depends on having assured access to training ranges and installations on the land, sea, air and the communications spectrums. However, our ability to train effectively is being slowly eroded by encroachment on many fronts. Urbanization, increasing environmental restrictions; competition with civilian demands for airspace, land, sea space, and radio frequencies threaten the long-term, sustained use of Marine Corps bases and ranges. Encroachment is a serious and growing challenge. Solutions are possible—we can achieve balance between military readiness, encroachment pressures, and stewardship responsibilities.

ISSUES AND TRENDS

Encroachment on our installations comes in many forms, but generally falls within three categories: environmental regulation, community complaints about noise from military activities, and attempts by civilian authorities to use air, land, sea and the communication spectrum dedicated to military activities. In short, the root cause of encroachment is increasing population and urbanization pressures around our bases, stations, and ranges.

While encroachment inexorably shrinks our training ranges, the military is faced with the need to introduce and train with new weapons systems possessing increased stand-off, survivability, and lethality capabilities. The training demand on our bases is already high, because there are fewer training facilities than in the past, partly due to base closures and realignments around the Nation and overseas. Our bases and their tenant forces have experienced both successes and failures in managing encroachment. We'd like to share a few of those with you.

Endangered Species

Military lands provide excellent habitat for over 300 federally listed threatened or endangered species that must be protected under the Endangered Species Act (ESA). The Department of Defense is the third largest Federal landholder, yet is by far the holder of the greatest known biodiversity on a per acre basis of all Federal agencies. Many of our installations have become the only large undeveloped areas remaining in urban areas where private development continues unabated. The lands remain undeveloped in order to conduct realistic training to assure readiness. The undeveloped areas on our installations support so many endangered species because we are very attentive land managers stemming from the Marine Corps' decades-long recognition that we must be good stewards of our training lands, to ensure they are available to train future generations of marines. Our stewardship commitment predates the Endangered Species Act. We take pride in our care for these resources and, in partnership with the U.S. Fish and Wildlife Service, have devised means to protect them while meeting our readiness requirements.

Marine Corps Base (MCB) Camp Lejeune, in North Carolina, has met our training needs while protecting the nine endangered species on the base; including two species of sea turtles and the red-cockaded woodpecker. During the May through October sea turtle nesting season, eggs are removed from a one-mile stretch of Onslow Beach daily and placed in an incubator. The hatched turtles are later released. This protects these endangered species while attempting to limit the disruption to expeditionary amphibious operations. *MCB Camp Lejeune* also supports the only increasing coastal population of the red-cockaded woodpecker. Initially about 10 percent of the base had training restrictions designed to protect this species during its April through September nesting season. We managed the forests to improve the woodpecker's habitat, dispersing nesting locations away from primary maneuver areas. Now, only about 1 percent of the base has training restrictions due to the red-cockaded woodpecker. In the last 3 years, the species population increased from 35 nesting clusters to 53, an increase unmatched by any other land manager in eastern North Carolina. We are successful because of the willingness of the U.S. Fish and Wildlife Service, state of North Carolina, academia, and environmental advocacy groups to work in partnership with us on the management of the endangered species at *MCB Camp Lejeune*.

Marine Corps Base Camp Pendleton, California's populations of endangered species increased from 10 in 1994 to 17 today. Last year, approximately 70,000 acres of *Camp Pendleton's* 125,000 acres were proposed as critical habitat under the Endangered Species Act. To a significant degree, the gnatcatcher, fairy shrimp and arroyo toad critical habitat proposals overlapped, threatening to blanket *Camp Pendleton* with critical habitat and associated training restrictions. Recognizing the potential impact to the combat readiness of units training and deploying from *Camp Pendleton*, the Marine Corps and the U.S. Fish and Wildlife Service worked together in an effort to resolve the situation. Ultimately the Base was excluded from critical habitat designation for most of the species. The Fish and Wildlife Service determined that the benefits of exclusion outweighed the benefits of designation, and also noted that we are currently preparing an Integrated Natural Resource Management Plan, as required under the 1997 Sikes Act.

Marine Corps Air Station (MCAS) Miramar, California, supports ten endangered species. The U.S. Fish and Wildlife Service, in response to court orders, proposed designating critical habitat for two species on about 65 percent of the station's area—including the runways and supporting aviation facilities. Clearly, such designation would have had strong readiness implications. We developed an Integrated Natural Resources Management Plan that established a framework to protect and preserve the station's endangered species, guaranteed the plan would be implemented, and defined measures to judge the plan's effectiveness. Most importantly, the plan made military readiness activities and endangered species protection mutually compatible. In their final rule, the U.S. Fish and Wildlife Service determined that lands on *MCAS Miramar* are not critical habitat for these species.

The Service's decision not to designate *Camp Pendleton* and *Miramar* lands as critical habitat is the subject of litigation brought against the Fish and Wildlife Service by the Natural Resources Defense Council (NRDC), and by a building industry association. The NRDC lawsuit demands that *Miramar* and *Camp Pendleton* lands be designated as critical habitat. If the plaintiffs prevail, the Fish and Wildlife Service may be compelled to designate critical habitat at *MCAS Miramar* and *MCB Camp Pendleton* even though our plans meet the need to protect endangered and threatened species.

Air Quality

Clean Air Act (CAA) visibility or nuisance-based "opacity" regulations can create challenges for the military during training operations that generate dust (from vehicular maneuvers) or smoke (from fog oil, smoke, or other obscurants) and temporarily impair visibility. For example, previous regulations in California and local air quality districts severely restricted and generally prohibited this necessary military training. The Marine Corps and the other military services overcame this issue by obtaining a statutory exemption under California law that allows the use of obscurants for training at military ranges in California.

The General Conformity Rule under the Federal Clean Air Act (CAA) also has significant potential to impact the basing of new weapons systems, new training activities, or significant changes in existing activities, at military ranges located in CAA nonattainment areas. The statute and the rule preclude any Federal action or activity in such areas that do not "conform" to the State Implementation Plan (SIP) for the area. In these air quality areas, if the emissions from a new activity or significant change in current activities exceed the specified regulatory thresholds, the entire increase must be fully "offset" or the proposed action must be changed to reduce

emissions. If the increase cannot be fully offset by reductions in emissions elsewhere at the installation, emission reduction credits, or the state's agreement to revise its SIP emissions budget to accommodate the increase, the action is prohibited by the CAA and cannot proceed. In southern California, the emission credit market is extremely limited and competitive.

Urbanization

Most encroachment issues result from population growth and urbanization. Urban sprawl is up against our installations and training areas, which were once remotely located. Methods for mitigating noise or other factors required by environmental regulations often deny the marines realistic training.

Beaufort County is the fastest growing county in South Carolina and one of the fastest growing in the Nation. *MCAS Beaufort* was annexed by the city of Beaufort. The action allows the city to exert influence on land use guidelines and urban growth on land surrounding the air station. The city appears intent on opening hundreds of acres of farmland around the air station for urban growth, which will increase the number of noise complaints regarding air station activities. Noise impacts from training are already an issue with the surrounding communities.

Marine Corps Base Quantico's border is facing encroachment due to a Western Transportation Corridor (WTC) Study, the purpose of which is to solve transportation needs in response to rapid urban growth. This proposed WTC in Stafford County, Virginia is another example of surrounding urban sprawl impacting an installation.

Air Space

Increased growth across the Nation has been followed by a significant rise in civilian air traffic. Many of our bases and training areas are in the direct path of flight corridors between large urban centers. We have four major bases and air stations located directly along the eastern corridor and five in southern California are in the approaches to Los Angeles International Airport, one of the busiest airspaces in the world.

Special Use Airspace (SUA) is a dimension required for effective training. It provides access to the ranges, segregation from civil aircraft operations, and maneuvering space for performing various ordnance delivery tactics. An air-to-ground range cannot exist without SUA. Creation of an additional SUA associated with the air-to-ground target ranges BT-9/11 in Pamlico Sound, North Carolina is required to achieve realistic training for Marine Corps aircraft. This additional airspace includes the Core and Mattamuskeet Military Operating Areas (MOAs), which when combined with the existing restricted airspace over the target ranges will provide one of the best tactical training complexes on the east coast. A MOA does not prohibit civilian aircraft from operating within its boundaries. The desired result of a MOA is to provide a means by which military and nonparticipating civilian aircraft are allowed to coexist in airspace with as few constraints as practicable. Efforts to obtain this additional airspace have been pursued for more than 12 years. A recent modification to the Marine Corps' original proposal includes raising the floor of the MOAs from 500 to 3,000 feet Above Ground Level (AGL) to lessen the impacts of noise on the areas below. Discussions are also continuing with the National Park Service in an attempt to address their concerns for maintaining the "natural quiet" on the nearby outer banks area of eastern North Carolina. Approval of this additional airspace is crucial to accommodate future training requirements, including deployment of standoff weapons.

Military Noise

Another concern of our civilian neighbors, with the onslaught of urban growth, is the noise created by our weapons systems and equipment—primarily helicopters, jets and artillery. This noise is not viewed by all as the "sound of freedom". *MCB Camp Lejeune* has received noise complaints about tank gunnery activities in the Greater Sandy Run Area. Prior to construction of these ranges, units had to travel to other military installations at great expense to satisfy training standards and prepare for deployments. Now that these new ranges are operational, the surrounding community has placed great pressure on the Base to close them as a means to reduce noise complaints. A recent letter from the Onslow County Commissioners asked the Marine Corps to close the recently completed \$6.5 million Combat Vehicle Crew Qualification Range. *Camp Lejeune* monitors noise levels at the active range and temporarily ceases live-fire training when noise levels at homes in the surrounding area exceeds acceptable levels. Two recently approved housing developments are currently under construction within 2,500 meters of two of the new Greater Sandy Run Area ranges, which will compound the noise complaint problem.

Complaints as a result of noise from military aircraft operations are becoming increasingly more emotional and political. Airborne noise potentially impacts installations, training ranges, SUA, and low-level training routes. Communities surrounding military airfields are principally exposed to noise resulting from aircraft takeoff and landing. Our installations develop Compatible Use Zone studies to identify appropriate land uses for areas immediately surrounding the installation. We then provide these studies to the local land use planning authorities, and request that they consider them when developing zoning ordinances. This process is only effective when it receives the support of the local planning authorities. Absent appropriate zoning restrictions, buffer land acquisition is our sole remedy to legitimate noise complaints.

Unexploded Ordnance

The application of environmental statutes to unexploded ordnance (UXO) and munitions on active ranges could impact our ability to train marines. Such statutes are: the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), and the Safe Drinking Water Act (SDWA). Their application could shut down or disrupt live-fire training.

Marine Corps Air Station Cherry Point, North Carolina, aviation units have increased their use of Bombing Target-9/11, in Pamlico Sound, to make up for the temporary loss of training available at Vieques. Those efforts have been met by government agency and local resistance. The Marine Corps and Navy are actively engaging the state regulators on these issues and believe we will develop a satisfactory solution.

Frequency Encroachment

New improvements in telecommunications have placed pressure on the portions of the radio frequency electromagnetic spectrum used by the Marine Corps. This pressure is in the form of requests for portions of the spectrum for civilian activities and from interference to both civilian and military communications. This form of encroachment is tentatively scheduled to be briefed at another hearing, but you should know that it has the potential to adversely impact the command and control capabilities of our Operating Forces, bases, and installations.

IMPACT ON READINESS

Our bases are the platforms where we train our marines, and from which we launch our MAGTFs. We need the sea, land, and air and the flexibility to use them. We would like to take this opportunity to cover with you some of the training challenges your marines face on a daily basis as a result of encroachment.

Fundamental to the success of Marine Corps operations are the concepts of expeditionary maneuver warfare and combined arms. The employment of naval surface fires, air, artillery, mortar, and direct fire weapons in conjunction with maneuver is essential to the effectiveness of the MAGTF. The most significant effect is the restriction on our MAGTFs, in partnership with the Navy, to train as a single, cohesive entity. They are forced to train piecemeal, separated by time and distance; often never "tying it all together" prior to deploying.

No where is this more evident than at *MCB Camp Lejeune* following the 1999 restrictions on training on Vieques Island Puerto Rico—a vital training facility used to ensure the readiness of deploying Marine Expeditionary Units (MEUs) and their Amphibious Ready Groups (ARGs). Since the range facility was closed in 1999, the east coast ARG/MEUs have been unable to conduct a live-fire Supporting Arms Coordination Exercise due to the lack of live-fire naval surface fire support (NSFS). Without the Vieques training, the MEU loses the opportunity to coordinate live-fire NSFS, an important piece of the integration package between the Carrier Battle Group (CVBG), Amphibious Squadron, and MEU. The January 31, 2000 Presidential Directive limits training on Vieques to inert ordnance. The 22d MEU did train on Vieques in October 2000 with inert ordnance to include inert artillery and mortars but, it was not the same. Live-fire training is essential to maintaining the readiness of Navy and Marine Corps forces.

Vieques is the only location on the east coast that can support live-fire training and maneuver on the scale necessary to maintain MAGTF combat readiness. MEUs have resorted to sending their NSFS personnel to train in Scotland with CVBGs enroute to the Mediterranean without the benefit of coordinating the training and application of fires with the rest of the ARG and MEU. As a result, ARGs and MEUs train in an environment that does not support combined arms operations prior to deployment.

MCB Camp Lejeune is the only location available for East Coast Marine Corps units to conduct amphibious operations. Sensitive habitat for all nine endangered species occupies 5 percent of the base's training area. Though, at a glance, this appears to be insignificant, it is not the amount of area that is of concern, it is the locations. The beach is also sensitive habitat. During nesting season, units are restricted to administrative offloads and traversing narrow lanes that have been hand-cleared of turtle eggs. Once off the beach, the remaining forms of sensitive habitat are astride roads leading to training and maneuver areas, and live-fire ranges. This hinders the ability of units to maneuver their vehicles in a tactical and realistic fashion. Because of the artificialities and canalization created by these restrictions, the advantages gained by force-on-force or freeplay exercises are greatly degraded. The limits to unrestricted movement and freeplay result in an inability to properly develop the decision-making skills of leaders at all levels, most severely the junior leadership, the future leaders of your Corps. Additionally, live-fire attacks with air, artillery and mortars in support of maneuvering forces cannot be conducted aboard *MCB Camp Lejeune*. These training restrictions and hindrances on *Vieques* and *Camp Lejeune* prevent our East Coast MAGTFs from the opportunity conducting realistic, meaningful training in combined arms and amphibious operations prior to deployment.

While simulation can be used to enhance combat performance, it cannot replicate or replace live-fire. Technology has yet to produce a mechanism to simulate the complex, end-to-end series of procedures associated with preparing and launching live weapons, then assessing the results in a training environment. Likewise, the handling and use of live ammunition, with the resultant psychological impact cannot be replicated by simulation. This holds true for the training of the individual marine as well as the entire MAGTF.

Marine Corps Base Camp Pendleton is the Marine Corps' most complete amphibious training base. Yet the doctrinal landing of a Regimental Landing Team is not possible. Even Battalion Landing Team-sized landings are severely limited. Beach access is the major factor limiting these activities. Access to and across our beaches is key to the conduct of our Expeditionary Maneuver Warfare. *MCB Camp Pendleton* has approximately 17 miles of beach, yet there is only a little more than 1 mile of unrestricted access with usable exit points. Movement on the beaches and adjacent inland terrain is restricted due to endangered species concerns and the presence of a State Parks, Interstate 5, and the San Onofre Nuclear Generation Plant on our land. These restrictions have resulted in only three usable exit points off the beach. These exit points, which are under I-5 and the paralleling railway, completely prohibit any tactical movement off the beach and require units to abandon realistic training and exit the beach in an administrative, non-tactical fashion. During March 2000, the 13th Marine Expeditionary Unit, while conducting their Special Operations Capable Certification prior to deployment, was limited to only 500 yards of Red Beach because it was breeding season for the California Least Tern. Units coming ashore on Landing Craft Air Cushion's (LCACs) administratively offloaded at the LCAC facility, before moving inland to continue the exercise. Logistical support employing helicopters with external loads was restricted to the administrative delivery of cargo seaward of I-5 and the railway, because of restrictions on overflying these two manmade features that traverse the entire length of Camp Pendleton's coastline.

Inland training restrictions continue to apply pressure on commanders at all levels to come up with innovative, realistic training that complies with environmental limitations. Off-road vehicular movement is seasonally restricted in various areas because of either breeding and nesting seasons of endangered species or simply because the seasonal appearance of a vernal pool. Environmental restrictions against digging have limited the placement of artillery and mortar firing positions. The placement of these positions is based solely on environmental factors, which prohibits the training experience of marines learning how to position their units based on the tactical situation.

San Clemente Island offers the west coast MEUs their only opportunity to coordinate naval gunfire, air, artillery, and mortars. It does not permit the coordination of fires with maneuver. Maneuver is limited because of the presence of the night lizard. This range is also home to an endangered population of the loggerhead shrike. During the bird's breeding season from February to July, our training is limited to 3 days a week. The use of live ordnance is restricted from May to November, because of the fire season. The use of inert ordnance is not practical, because the Marine Corps' inventory for artillery and mortars is limited.

MAGTF Training Center at Twenty-Nine Palms is located in California's Mohave Desert. It has few encroachment concerns and is the only site marine units have to exercise the live-fire and maneuver capabilities of the entire MAGTF. *Twenty-*

Nine Palms does not, however, provide for amphibious training. *Camp Pendleton* units are increasingly using *Twenty-Nine Palms* to avoid their Base's training restrictions. The increased competition between resident units, units training for the ten annual live-fire Combined Arms Exercises, and units from *Camp Pendleton*, puts training time and space at a premium. Deploying to train at *Twenty-Nine Palms* has its drawbacks. Firstly, it is expensive. 11th Marine Regiment, from *Camp Pendleton*, saved over \$100,000 by conducting their annual Fall Firing Exercise at *Camp Pendleton* and *Twenty-Nine Palms* rather than solely at *Twenty-Nine Palms*. The down side was that the exercise was greatly reduced in size to accommodate the restrictions at *Camp Pendleton*. Second, deploying to *Twenty-Nine Palms* increases deployment tempo for marines. *Twenty-Nine Palms* is not a panacea to the restrictions resident at *Camp Pendleton*.

MCB Kaneohe Bay in Hawaii has its own encroachment challenges. The Army's Makua Range is the only live-fire range on Oahu capable of supporting company maneuver supported by mortars and attack helicopters. The range has been closed since September 1998, due to endangered species and archeological compliance issues. Without this range, marines must deploy to the Pohakuloa Training Area (PTA) on the big island of Hawaii. Though workable, this solution has drawbacks. Ground unit maneuver and close air support or indirect fire are possible, but cannot be done simultaneously. It is also not cost effective to deploy marines to the PTA and this option creates an additional deployment tempo burden. The Marine Corps wholeheartedly supports the Army's environmental analysis efforts to reopen the range.

MCAS Yuma in Arizona is the home of our Aviation Weapons Tactics School, which uses air-to-ground ranges, such as the Chocolate Mountains aerial gunnery range to the West and the Goldwater air-to-ground range to the East. The Goldwater Range provides habitat for the Sonoran Pronghorn Antelope. The Marine Corps completed an Environmental Impact Statement in 1997 evaluating our aviation impacts on this and other sensitive biological resources. A recent court decision requires the Marine Corps to prepare a revised cumulative impacts analysis of military air operation impacts on the species. The same court decision requires the Fish and Wildlife Service to reevaluate the biological opinion, which allows aviation operations that may affect the species. This reevaluation may result in further restrictions in air operations. Our current practice is to "wave off" flights when the animals are in the impact area. The target areas in the Chocolate Mountains aerial gunnery range are surrounded by critical habitat for turtles and cannot be relocated due to noise concerns from adjacent communities. The continuous impacts from encroachment have reduced the Chocolate Mountains air-to-ground impact zone, which was once larger than *MCB Camp Pendleton*, to an area less than one-tenth its original size. The training value of these ranges is reduced, because target acquisition training becomes less challenging as the acquisition area becomes smaller and the targets fewer.

These encroachment limitations debilitate our MAGTF training. We are training a generation of marines who will have less experience in the intricacies of combat operations. If encroachment continues, many of today's junior leaders may initially face the full challenges of combat not during training, but during conflict.

We have shown you some of the successes and failures your marines experience on a daily basis while facing these challenging issues. We would now like to propose some possible solutions, which could result in a balanced approach to meeting the needs of the Marine Corps, the community, and the environment.

STRATEGIES

Just as encroachment takes multiple forms, the solutions to encroachment management are many. The Marine Corps encroachment management strategy is three fold: public outreach and engagement, legislative clarification, and dedication of surrounding undeveloped land as permanent natural areas.

It is in our best interests to reach outside the fence and actively engage our neighbors, educate them on our mission and operations in support of readiness, work to understand their concerns, and develop working relationships built on respect to limit or prevent encroachment pressures. We are engaging encroachment issues at all levels of government. Some encroachment issues affect more than one installation. Cross service coordination is often appropriate for resolving issues. One example of engagement at the regional level is the efforts to initiate constructive dialog with state governments such as California's Defense Retention and Conversion Council. The Marine Corps can articulate recommendations for the state to reduce encroachments, while improving the viability of the installations, ranges, and training areas.

Recently, we met with members of the Endangered Species Coalition, an umbrella organization consisting of environmental advocacy groups concerned about endangered species. Many of the coalition's members have sued the Marine Corps over environmental issues. However, they understand that for many ecosystems, military lands are the only undeveloped lands left. Though they don't always agree with our activities due to their endangered species concerns, they are impressed with our stewardship record. They are interested in forming a strategic alliance with us to help keep undeveloped lands in their natural state. Achieving this mutually beneficial goal will limit additional urbanization around our installations. It also builds support for our military land use and stewardship efforts, while reducing friction and litigation.

This Congress will re-evaluate many laws governing environmental protection. The Marine Corps is not asking for a rollback of these laws. The Marine Corps' commitment to protecting our Nation also extends to protecting our natural resources. We have been innovative in meeting our compliance requirements, while meeting our readiness needs. We can, and are doing much to protect the environment. However, we cannot be expected to shoulder a disproportionate share of environmental protection and still meet our readiness requirements. We ask that you consider the unique nature of military activities when developing or reauthorizing these laws. Providing acknowledgement of the need to consider national security issues in development and implementation of regulations will also benefit the regulatory community by allowing them the flexibility to weigh the value of good stewardship offered through our land management practices in their enforcement of laws and regulations.

The Marine Corps needs the land around its installations to remain undeveloped. Our bases and ranges were largely acquired during the 1940s and 1950s. At that time, they were "sized" to fit the weapons systems of the day. They were also out in the middle of nowhere. The footprints of our weapons systems have become bigger, and the far-off cities have become next-door neighbors. Our installation boundaries, though, have remained the same, and in some cases have been reduced. The Marine Corps will need to acquire additional land around some of its installations and ranges to protect them from additional urbanization pressures.

CONCLUSION

Today's world situation, combined with our mandate to be a force in readiness, highlights the need for a properly trained Marine Corps. The Corps will continue to focus its efforts on the strength of its Marine Air Ground Task Forces. However, to meet tomorrow's challenges and maintain your expeditionary force in readiness, will require the ability to train marines during peace the way we will fight in war.

We have spoken today about the need for fundamental recognition of our unique mission and military land use needs, our stewardship, our contributions to our local regions, and our vital role in the National defense. The Marine Corps takes great pride in its care of the environment and natural resources in its trust. We have achieved a fine record of stewardship. In light of that record, the Marine Corps needs support of its unique requirements considered by all levels of government when developing and implementing Federal statutes, as well as local, state, and Federal land use and air space policies and practices. In recognizing those needs, I am confident that we can achieve and maintain the appropriate balance between military readiness and competing demands for scarce resources.

Senator INHOFE. Thank you. General Buchanan.

STATEMENT OF MAJ. GEN. WALTER E. L. BUCHANAN III, USAF, DEPUTY CHIEF OF STAFF FOR AIR AND SPACE OPERATIONS

General BUCHANAN. Thank you, Mr. Chairman. Thank you for the opportunity to talk to you about Air Force ranges and some of the challenges we face in the future to properly manage them. Maintaining continued access to our ranges and air space is critical to the Air Force and DOD readiness. We view these areas as national assets. They allow the Air Force to test new equipment, develop tactics and, most importantly for us, to train the readiness of our air crews.

Air Force ranges are also used to accommodate important civilian aeronautical testing for public use and public protection. The cur-

rent Air Force ranges we have are successors to those that were first put in place in the Army Air Corps of World War II. They have evolved over time to meet the changing test and training requirements.

The increased lethality of today's modern combat environment has also required that we have evolved the way that we train to be sure that our young men and women are trained to go into combat. Modern ranges of today include electronic warfare, arrays of tracking and recording equipment, and multiple target sets. The Air Force currently owns and/or operates approximately 35 ranges in the continental United States and Alaska.

We see the training ranges of the future will still exist in three basic formats, smaller primary training ranges that provide a chance for local units to hone their skills on a day-by-day basis, intermediate-sized ranges such as the Air National Guard's combat readiness training centers, which allow for more complex skill training, and large ranges like the Nevada Test and Training Range which provides a complex environment of threats, targets, and instrumentation needed for large force exercises to men and women for the complex combat environment we face in the future.

Ranges will continue to be needed for training purposes to provide the large air and land areas necessary for advanced live weapons evaluations. Test and space ranges also accommodate a substantial number of civilian aviation and space activities. Large training ranges dedicated to large force exercises will routinely include three types of participants. We will have the real operations actually on the scene, and in the air we will have operations participants who are linked by simulators and then, too, we will have simulator players.

At the same time, though, at the other end of the scale, the primary training ranges will continue to serve the nearby flying organizations. However, due to size and air space limitations, we will find that some of the evolving long range weapons tactics will have to be simulated because we will be unable to use them on the smaller ranges. However, these smaller training ranges will still be important and will require modifications for basic weapons and modern warfare training in the future.

Continued access to ranges will remain critical to the Air Force. In 1994, we learned a very valuable lesson when we had both a failed range project in Idaho, and at the same time, we had a successful air space proposal in Alaska. In light of these events, we have reorganized our staff to consolidate range and air space management under an operations lead. In the past, we have been fragmented in our approach to how we managed ranges and training.

What we found, was that we needed to go ahead and focus these with an operations lead; with a mission requirement first to meet the legal requirements that have become more complicated over time. Our goal both then and today is to meet the military needs first while addressing public concerns and Federal, tribal, state and other agency issues as well.

We also recognize the importance of establishing and maintaining permanent relationships with the stakeholders. In general, we have found most of these stakeholders very supportive of the Air Force and our mission, as long as we have communicated with

them. Sustainable access to ranges benefits many folks. Our ranges contain significant cultural and natural areas where they are used for grazing or agriculture, to allow hunting, or forms of outdoor recreation.

Lastly, I would like to discuss five areas of importance to the Air Force and all of DOD, unexploded ordnance, air quality, noise, the national air space redesign, and endangered species.

Meeting the challenges posed by these issues remains key to meeting the military need and abiding by the myriad laws regulating ranges and air spaces today. Concerning unexploded ordnance, the Air Force has had a program in place since the 1940s to clear unexploded ordnance from our ranges. Existing Air Force policy requires that active air-to-ground ranges be cleared on a quarterly, annual, and 5-year basis at varying distances from each target.

We have recently taken another hard look at our unexploded ordnance practices to make sure we manage our ranges over the life-cycle of the entire range in terms of what we can do today to possibly avoid costs in the future. Our ultimate goal is to manage our ranges effectively and efficiently throughout the life-cycle process and allow for sustainable operation that focuses on mission requirement, and at the same time, safe and effective unexploded ordnance removal, residue treatment, and long term environmental stewardship.

Air quality regulations are another challenge. Many of our largest and most important installations are located in areas that are experiencing rapid growth, and the attendant pressures resulting from air quality standards. Several of our bases are in nonattainment areas or areas destined to become nonattainment. This impacts basing and beddown decisions. If the beddown action is found not to conform to the state implementation plan for the clean air compliance, the Air Force must obtain air quality credits, reduce emissions at another base, or counter the impact, or not be allowed to bed down at that location, otherwise the proposed action cannot take place.

At the same time, we are working very hard to lower our emissions at all of our installations. We are working with state regulations and local communities to ensure that we have the flexibility to base aircraft at installations where we have already made investments in infrastructure not only in the installation itself, but in the adjacent ranges that are used by the installation aircraft.

Noise is one of the most obvious byproducts of readiness and aircraft and has long been a dilemma at air bases. In addition, though, we have found an increased public concern over low-level routes, military operating areas, and the ranges themselves. Today, noise is the Air Force's number one concern when we try to modify or establish new air space. In some cases we can accommodate public noise concerns with no loss to the effectiveness of our training. When apprised of a noise-sensitive area, we routinely chart it and avoid it if possible.

In a few instances, we have made allowances for short periods in national park recreation areas at times when the park experiences its peak in number of visitors. When we cannot deconflict schedules, we communicate to the users and managers alike to let them know what we are doing, why we are flying the way we are,

and when. We have found that altering their expectations and increasing their knowledge of our requirement has been helpful.

In addition, the services are working together to formulate a plan that will eventually lead to a unified DOD noise program to address the full range of noise issues, not only from aircraft, but also from our military operations, testing, and training.

Despite decreases in force structure and flying hours, the DOD and the Air Force still have a need for air space. In 1998, the FAA initiated a national airspace structure redesign with goals to maintain safety, decrease delays, and increase flexibility, predictability, and user access. A part of user access is the requirement for special use air space for military training. This is necessary for us to conduct critical testing of equipment, and training of our air crews.

In the future, as we assist the FAA in the National air space redesign, the key to successful establishment and modification of the existing air space will require the application of the four following parameters.

Volume. It will still require sufficient operational test and training air space to accomplish our objectives. New and more lethal weapons are requiring larger pieces of air space to effectively deploy and test them.

Proximity, distance to the air fields themselves, time. We must have the ability to get on the ranges at the appropriate times and the ability to remain on them sufficiently to conduct our training.

Then, specific attributes, the ability to accomplish specific air-land-sea events that are needed for the testing required.

The first three are self-explanatory. The term, attributes, refers to the quality that differentiates one piece of air space from another. For instance, there might be a range over water, one over a desert, or over mountainous terrain.

The key to maintaining our access to special use air space is to work closely with the FAA. The senior members of the DOD Policy Board on Federal Aviation are currently developing a plan for effective joint FAA-DOD interaction in this effort.

Currently, 79 federally listed threatened and endangered species are found on approximately 9 million acres of Air Force lands and waters. They include various species of antelopes, bats, mice, reptiles, amphibians, and plants. In some cases our installations and ranges are the only large, undeveloped, and relatively undisturbed areas remaining in the growing urban areas.

This often leaves Air Force lands as the last refuge in the region that can support endangered species. Biological opinions resulting from required Endangered Species Act assessments have resulted in range and air space restrictions mainly associated with aircraft noise and munitions use. We operate under altitude restrictions due to noise and its possible effects on endangered species in Arizona and New Mexico.

The Barry M. Goldwater Air Force Range in Arizona is home to the last 100 or so of the Sonoran pronghorn antelope in the United States. We fly about 70,000 sorties a year there. We have seven targets in the area that are surveyed daily before we can fly on these sorties. If we find any antelope present, we do not drop or strafe the target that particular day.

The key to addressing endangered species is adequate science and good communication. The Air Force will continue to monitor activities even outside our fence line and engage our local communities before issues begin to impact Air Force ranges. We have found that where we have good relationships with regulators, we have been able to develop cooperative strategies that allow the Air Force to accomplish its mission while at the same time providing necessary stewardship of this Nation's natural resources.

In conclusion, I would like to reiterate that maintaining continued access to Air Force ranges and air spaces is vital to sustaining mission readiness. To date, the impacts of encroachment have resulted in minor impacts for our operations with work-arounds implemented to avoid significant readiness impacts. However, we expect to encounter increased challenges, not only with our current level of operations, but also with the beddowns of new weapons systems realignments in the coming years.

We recognize the need to balance our test training and readiness requirements with responsible stewardship. We believe effective and early communication that is key. Partnerships we have with our sister services, civilian and Government agencies——

Senator INHOFE. General, can I ask you to kind of wind up here?

General BUCHANAN. Yes, sir, and we appreciate very, very much, the hearing today and your concerns, and we stand ready to answer any questions.

[The prepared statement of Major General Buchanan follows:]

PREPARED STATEMENT BY MAJ. GEN. WALTER E. BUCHANAN III, USAF

Mr. Chairman and members of the committee, thank you for the opportunity to speak to you about Air Force ranges and some of the challenges we face in the future to properly manage them.

Maintaining continued access to our ranges and airspace is critical to readiness. These areas are national assets, which allow the Air Force to test new equipment, develop new tactics and train our aircrews. AF ranges also accommodate important civilian industry aeronautical testing, and provide for public use and natural and cultural resource protection.

BACKGROUND

Current ranges are the successors of test and training ranges designed to support the Army Air Corps in World War II. Tactical fighters used decentralized "backyard" ranges (now called "primary training ranges") to practice the release of live and practice bombs. Such ranges usually were located within a 150 nautical mile (NM) radius of their home bases. Strategic bombers trained on ranges and simulated deliveries using radar bomb scoring sites thousands of miles away. These ranges were customized to fulfill the training requirements of individual aircraft types and various missions. Large-scale exercises were conducted on training and test ranges, usually in the west, which could accommodate such tactics. Today, these ranges include an extensive electronic warfare array, an instrumentation system for tracking and recording aircraft activities, and multiple target concentrations. The Eglin Range, FL; Nevada Test and Training Range, NV; Barry M. Goldwater Range, AZ; and the Utah Test and Training Range, UT, are our largest ranges.

PRESENT RANGES

Today, management of Air Force (AF) ranges is the responsibility of several AF commands. Air Combat Command (ACC) is generally responsible for the majority of combat training that occurs on our ranges. Other commands that manage ranges predominately for training include the Air National Guard (ANG), Air Force Reserve Command (AFRC), Pacific Air Forces (PACAF), Air Education and Training Command (AETC), and United States Air Forces Europe (USAFE). Air Force Materiel Command (AFMC) is responsible for ranges primarily tailored toward test activity and Air Force Space Command is responsible for the management of the East and

West Launch Ranges. Currently, all commands and service components share ranges. For example, the AF operates 17 ranges on U.S. Army lands in the continental U.S. (CONUS) and Alaska.

PRESENT AIRSPACE

The FAA manages the complex multi-use nature of the National Airspace System (NAS) to provide both safety and efficiency for civil and military users. Viewed in a two-dimensional perspective, military Special Use Airspace (SUA) appears to cover a large portion of the CONUS. Adding the third dimension (depth) shows that civilian air traffic uses the airspace above SUA even when it is active. But to gain a true perspective of the AF's use of the National Airspace System (NAS), the fourth dimension (time) must be considered. In other words, as our force structure has decreased, the time we use the NAS has also decreased.

RANGES AND AIRSPACE IN THE FUTURE

Consolidation of units after base closures, more capable aircraft systems, long range precision weapons such as JDAM, JSOW, and AMRAAM and constantly changing tactics will continue to obligate the AF to modify and consolidate our ranges and SUA to allow our aircrews to be the most proficient possible.

The training range of the future will still exist in three basic formats—smaller primary training ranges that provide a chance for local units to hone their skills on a day-to-day basis, intermediate size ranges such as the Air National Guard's Combat Readiness Training Centers which allow for more complex skill training in an increasingly instrumented environment, and large ranges which provide a complex environment of threats, targets, and instrumentation needed for large force exercises.

Ranges will continue to be needed for test purposes providing the large air and land areas necessary for advanced and live weapons evaluations. Test and space ranges also accommodate a substantial number of civilian aviation and space activities. Large training ranges, dedicated to large force exercises will routinely include three types of participants—real operations on the scene, operations from participants linked by simulators, and simulated players. Primary Training Ranges will continue to serve nearby flying organizations. Some long-range weapons delivery tactics will be simulated. However, the Primary Training Range will still be important and will require modifications for basic weapons and electronic warfare training in the future.

RANGE MANAGEMENT IN THE AIR FORCE

In the coming years, our ability to modify ranges and airspace will be critical to maintaining AF readiness. However, the legal and procedural requirements are more and more complicated and time consuming and military needs can change quickly. In 1994, the Air Force was in the middle of an important range project that eventually failed and an equally important airspace project that was ultimately successful. General Ralston, the AF Deputy Chief of Staff for Plans and Operations at the time, reorganized his staff to consolidate operational range and airspace management policy and provide operational leadership in this important area. Although ranges and airspace are still managed by either individual units or the major commands, General Ralston set the vision for range and airspace management that we still follow today. Our goal is to meet the military need while addressing and resolving, to the extent possible, public concerns and Federal, tribal, state, and other agency issues. We have adopted a spirit and practice of flexibility, and a willingness to adapt when we can without compromising our operations. We also realize the importance of establishing and maintaining permanent relationships with stakeholders. Most of those stakeholders are very supportive of the AF and our mission. Sustainable access to ranges benefits many people. Our ranges contain significant cultural and natural areas, are used for grazing and agriculture, and allow hunting or other forms of outdoor recreation.

CHALLENGES TO SUSTAINABLE RANGES AND AIRSPACE

In this session, I intend to focus on five areas that stress our ability to maintain sustainable access to ranges and airspace. They are unexploded ordnance, air quality, noise, the NAS Redesign, and endangered species. These areas are generally referred to as encroachment issues. Encroachment on ranges and airspace is a serious and growing challenge to the Air Force, as well as the other services. Encroachment issues are complex and involve multiple Federal, state, tribal and local agencies, as well as Congress and the public. Meeting the challenges to readiness posed by these

issues will be key to meeting the military need and abiding by the myriad of laws regulating ranges and airspace.

UNEXPLODED ORDNANCE (UXO)

UXO and the disposal of residue material (primarily scrap metal) on air to ground ranges is one area where we have taken a hard look at our practices and policies recently. UXO and range residue (used targets, inert ordnance, etc.) physically occupy only a very small part of any air to ground range, but its presence is an increasingly expensive problem. The costs associated with clearing closed ranges have led us to the conclusion that we need to plan and manage for the entire life-cycle of a range.

The AF first started clearing ordnance from active ranges in the late 1940s. Active range clearance not only provides for safe target area operations, but also provides airfield-recovery training for our Explosive Ordnance Disposal specialists. AF policy requires that active air to ground ranges be cleared on a quarterly, annual, and 5-year basis at varying distances from each target. We have reviewed our practices and found that we could make some changes that would still allow us to meet our military need and lessen the impacts and costs in the future. This, combined with our current scheduled UXO and residue removal program, will ensure long-term range sustainability and the safety of personnel on the range. Our ultimate goal is to manage our ranges effectively and efficiently throughout the life-cycle process that allows for sustainable operations, safe and effective UXO and residue treatment, and long term environmental stewardship. These policies are not without costs. One of our commands, Air Combat Command, is currently undertaking a project to remove the legacy of residue that has accumulated on some of our ranges. In fiscal year 2000, the AF dedicated \$4.8 million to this effort, removing residue at the rate of 1 million pounds per month. At current funding levels, it is estimated it will take approximately 4 years to remove known accumulated residue from ACC's primary training ranges alone. Remediating closed ranges and clearing active ranges will need to be a long and incremental process to be affordable under today's budgets. The same active range operations and maintenance budgets that fund targets and electronic warfare operations for our aircrews fund UXO and range residue removal. Anything more aggressive than a long-term program will significantly strain present readiness accounts.

AIR QUALITY

Many of our largest and most important installations are located in areas that are experiencing rapid growth and the attendant pressures resulting from air quality standards. A number of our bases are currently located in "nonattainment" areas, and more bases are in areas that surely are destined to become nonattainment areas. Air quality pressures generally affect operations at our installations more than ranges, and they potentially limit our basing options to support force realignment and weapon system beddowns. If the beddown action is found not to conform to the state implementation plan for Clean Air Compliance, the Air Force must either obtain air quality credits, or reduce other emissions at the base to counter balance the impact. Otherwise, the proposed action can not take place. We are working very hard to lower our emissions at our installations. We are working to ensure that environmental, safety, and health considerations—including air quality—are integral to requirements definition and the acquisition process. We are working with state regulators and local communities to ensure we have the flexibility to base aircraft at our installations which have huge investments in infrastructure not only on the installation itself, but also in the ranges used by installation aircraft.

NOISE

Noise from military aircraft is one of the most obvious byproducts of military readiness and has long been a dilemma at our bases. Additionally, many people are increasingly concerned with noise along many of our low-level flying routes, in our military operating areas, and on our ranges. Today, noise is the AF's number one concern when we try to modify or establish new airspace. We often hear the "not in my backyard" philosophy. Some people say they want a strong national defense as long as the AF flies "somewhere else." However, if you look at a map of the U.S., "somewhere else" doesn't exist. In fact, "somewhere else" is always "right here" for someone else. In some cases, we can accommodate public noise concerns with no loss to the effectiveness of our training. When apprised of a noise sensitive area, we routinely chart it and avoid it if possible. In a few instances, we have made allowances for short periods in National Park recreation areas when the park experiences its maximum number of visitors. When we cannot deconflict schedules, we try to com-

municate to users and managers alike to let them know what we are doing; when we are flying and why. We have found that altering their expectations and increasing their knowledge of what is going on can reduce a person's negative reaction to noise.

The services have formulated a plan that will eventually lead to a unified DOD noise program to address the full range of noise issues not only from aircraft, but also from other military operations, testing and training. This program will coordinate policy, plans, and funding for noise effects, maintain noise models, and oversee R&D efforts. It will also include efforts to ensure that environmental, safety, and health considerations—including noise—are integral to requirements definition and the acquisition process.

NATIONAL AIRSPACE REDESIGN

Despite a decrease in military force structure and total flying hours, the DOD has a continuing requirement for airspace to train in. At the same time, fueled by deregulation and relatively affordable fares, the civil airline industry has grown steadily. The projected growth rate of the civilian airline industry is expected to continue at a 6 percent annual increase for the foreseeable future. In 1998, the Federal Aviation Agency (FAA) initiated the National Airspace Redesign program. This program has been commonly called "Free Flight." The goals of the redesign are to maintain system safety, decrease system delay, increase system flexibility, increase predictability, and increase user access.

A part of "user access" is DOD Special Use Airspace (SUA), which is necessary to conduct critical testing of equipment and training of aircrews. In the future, the key to the successful establishment, modification and use of SUA will require the application of four following parameters:

- Volume—enough to accomplish operational, test or training objectives
- Proximity—distance to operating airfields
- Time—available when operations, test, or training required
- Attributes—ability to accomplish specific air/land/sea events

The first three are self-explanatory. The term "attributes" refers to the quality that differentiates one piece of airspace from another. For instance, there might be a range under the airspace, or mountainous terrain needed for a particular test or instrumentation needed for training.

The key to maintaining our access to SUA is to work closely with the FAA. The senior members of the DOD Policy Board on Federal Aviation along with the Department of Transportation/FAA are currently determining a plan for effective joint FAA-DOD interaction. We will have to be able to predict and articulate our requirements. In order to move toward more real-time use, we will have to work with the FAA to focus on the technology necessary to make real-time work. Finally, we will have to take advantage of the natural flexibility of air operations to work creative solutions to difficult issues.

ENDANGERED SPECIES

Currently, 79 federally listed threatened and endangered species are found on approximately nine million acres of AF lands and waters. They include various species of antelope, bats, mice, reptiles, amphibians, and plants. In some cases, our installations and ranges are the only large, undeveloped and relatively undisturbed areas remaining in growing urban areas. This often leaves AF lands as the last refuge in the region that can support endangered species. Biological Opinions resulting from required Endangered Species Act assessments have resulted in range and airspace restrictions mainly associated with aircraft noise and munitions use. We operate under altitude restrictions due to noise and its possible effects on endangered species in Arizona and New Mexico. The Barry M. Goldwater Air Force Range in Arizona is home to the last 100 or so Sonoran Pronghorn Antelope in the United States. The DOD flies about 70,000 sorties there each year. Seven different target areas are surveyed daily before we fly any sorties. If there are antelope present, we do not drop or strafe on that target that day. The potential designation of range areas as critical habitat could seriously limit our ability to modify missions on our lands. We need to work with other agencies to ensure that habitat constraints do not restrict our operations. For instance, in the Sonoran Desert, we are participating in a DOD/Department of Interior sponsored ecoregional study. This study, conducted by the Nature Conservancy and the Sonoran Institute, with the cooperation of the Mexican State of Sonora, has characterized the resources on over 55 million acres in the U.S. and Mexico. This broad view by over 100 academic, agency, tribal and public Sonoran Desert experts will help Federal agencies and local governments to set their resource planning within a larger ecoregional context. The U.S. Marine

Corps and the AF are using the study as a starting point for the Integrated Natural Resource Management plan for the Goldwater Range and Pima County, Arizona has incorporated the study into their overall planning effort.

Marine environmental protection regulations also have the potential to impact Air Force operations. The Air Armament Center at Eglin AFB, FL uses live munitions over the Gulf of Mexico for a wide variety of live ordnance test and training and has obtained permits from the U.S. Fish and Wildlife Service (FWS) to allow them to carry out their mission. For example, gulf sturgeon in the area are electronically tagged. FWS employees track the sturgeon to ensure they are not in an area where live ordnance is being detonated.

The key to addressing endangered species is adequate science and good communication. The AF will continue to monitor activities outside our fence-line and continue to engage with local communities. We have found that where we have good relationships with regulators, we have been able to develop cooperative strategies that allow the AF to accomplish its mission while at the same time providing the necessary stewardship of this nation's natural resources.

SUMMARY

The Air Force manages approximately 9 million acres of bases and ranges. When many of these installations were established they were in rural, sparsely populated areas like the deserts of the southwest. These areas are seeing double digit increases in population growth. In order to ensure that the rapid pace of urban growth in some areas does not endanger our existing capital investment in base infrastructure, as well as our ability to access test and training areas, we will need to work closely with local governments and other interested parties to safeguard our capabilities to operate effectively as an AF.

We not only need land and airspace, but we also rely heavily on critical parts of the electronic spectrum to carry out our missions. We must also ensure we can continue developing new electronic countermeasures and counter-countermeasures systems and capabilities as well as exercise existing systems as closely as possible to how we would employ them in conflict. To date, the impacts of encroachment have resulted in minor impacts to our operations, with work-arounds being implemented to avoid significant readiness impacts. However, we expect to encounter increasing challenges not only with our current level of operations, but also with beddowns of new weapon systems or realignments.

Maintaining continued access to AF ranges and airspace is vital to sustaining mission readiness. The AF recognizes the need to balance its test, training, and readiness requirements with responsible stewardship. There will be challenges in the future. Effective communication is the key. The partnerships we have with our sister services, civilian government agencies, and other stakeholders are essential. Together, we can meet these challenges head-on and sustain our readiness into the 21st century. We continue to look to our ranges and airspace to provide the AF the operational flexibility, efficiency, and realism necessary to continuously enhance readiness while allowing commanders to minimize, to the extent possible, the impacts of their mission on the community, the environment, and the National Airspace System.

Senator INHOFE. Well, let me tell you how we are going to do this. We will take 7-minute rounds, so if we can try to confine our answers to that short period of time so that we can cover the things that are necessary. I am going to begin, and I am going to use the early bird rule if that is all right, of course, with the Ranking Member.

There are a couple of areas that I want to make sure that we get into, and so I want to start off. As I mentioned in my opening remarks, I have been for some time the Chairman of the Clean Air Committee. During that time we were fighting what I thought were unscientific requirements that we had to comply with concerning ambient air, which can be in two forms. It can be ozone and particulate matter.

Unfortunately, the courts, as you are all aware, have overturned this thing, so all of a sudden we are going to have areas that are in nonattainment. I will just use an example in my state, because I am very concerned about Fort Sill, as Comanche County is one

of those counties that are going to be out of attainment, according to the map that EPA has. Quite frankly, General Buchanan, I think that very likely Altus AFB, OK, could have the very same problem.

Now, in the case of Fort Sill, it is the ozone portion of it. That means that we could be faced with a situation of not knowing when we are going to be able to start up our diesels or whether we are going to be able to use our equipment. So I would like to have you try to quantify the problem here as to what we might be looking at in terms of your training, the artillery training at Fort Sill in Oklahoma.

General VAN ANTWERP. Sir, dealing with specifically Fort Sill, I think the challenge will be when you can train, when you can meet these required ozone restrictions, and opacity restrictions that allow you to train during the optimum time.

We have found that many of our installations, at the very time that it is right to do live firing or to use pyrotechnics or to use smoke, or those other things that have air quality impacts, is exactly the opposite time of when you would want to train. So we find that what we are trying to do, to train our soldiers to do and recognize the optimum conditions from a standpoint of weather and other environmental conditions, we cannot absolutely not train during those times, and so it is very artificial training.

Senator INHOFE. Well, but of course you have some guard units that come in for a short period of time, and if they happen to be there during that time frame when you could not train, what would happen, just no training?

General VAN ANTWERP. They would certainly have to look for other opportunities throughout the year. I would think they would have to seriously consider whether they could train during that period, and normally it is during the warmer times in the summer when they actually have their scheduled training. So this is a huge concern in the Guard and Reserve.

Senator INHOFE. It is something we are going to address. Right now we are addressing it in the other committee, with legislation that might ease up, but right now I consider it to be a very serious problem.

General Buchanan, would you respond. If this ended up being—well, in fact, Tinker Air Force Base is in a nonattainment area, according to the EPA maps.

General BUCHANAN. Yes, sir, and you mentioned Altus. The impact of restricting training at Altus would be significant. It is the only base right now where we currently train all of our strategic airlift forces. Where we do initial check-outs in the C-5, C-141, C-17. You can see where our strategic airlifters are day-in and day-out, both for supporting operations overseas and at the time of conflict, so if we had to restrict that, that would be difficult.

Senator INHOFE. Admiral Amerault and General Hanlon, I want to make sure we get started on this discussion about what I consider to be the greatest crisis in our training today, and that is what happened on the island of Vieques. The two of you are involved and have been involved, or your services have been involved in integrated training. With the problems present that we are all

very familiar with, we have had to suspend training for a period of time and then use inert training.

So I would like to have each one of you from your perspective—perhaps, Admiral Amerault, you might even cover the problems. I was out on the U.S.S. *Eisenhower* when they were trying to get the training, and they were having to use Pinecastle and some of the other places, to respond as to what this means in terms of your training ability, and then, of course, General Hanlon, as you are going through your amphibious operations over there, what it would mean if you were not able to use live-fire.

Then thirdly, since there is no other alternative out there, and I have been all the way around the world looking at every alternative, how this is going to impact the training of our battle groups from the east coast.

Admiral AMERAULT. Yes, sir, and I probably was remiss, I did not introduce two gentlemen who have come with me today, Admiral Baucom and Admiral Heimgarten, distinguished aviators who head my environmental shop and my readiness shop, and I am glad they are here today.

Yes, sir, I know that you are a pilot, and I know that you realize the physical and intellectual challenge, the stressful activity that is required in flying airplanes is intense, and you know, as well, that that can be elevated to the highest level.

When you combine that with the speed of jet aircraft, the fact that live air ordnance is carried on the wing, integrated formation flying coming at targets, precise timetables, friendly troops on the ground, the threat of any antiaircraft missile or gun fire, or the threat proposed or posed by jamming or other things that interfere with the aircraft that are being flown. Those kinds of air challenges and that kind of stress is impossible, I think, to simulate. No one has ever crashed a simulator and not walked away from it, in my experience. It is that very kind of stressful environment that we can put together at Vieques.

If you think about the geography of the Navy's activities, and to a large extent the Marine Corps', it would seem to anybody that we have unlimited training space. We have got the vast oceans of the world. But really, where it is important to us, is the interface between the shore and the ocean, is where shore meets ocean, and particularly these days, as our concept of operations is more centered on the littoral activity.

Blue water navies are not threats to us today. That can happen again, but right now we are more concerned with those who might operate against us in the littoral, where the land meets the ocean.

In Vieques, we have a very particular kind of an environment. It is out of the general aviation flight paths, and so we are not restricted as to height. We are very unrestricted in terms of access to the air space because of intruding airliners.

Second, there are deep water enclaves very close to the land, and its shallows up. That mimics very much what happens to submarines approaching from sea to the shore and, in fact, it mimics the environment that they would be in if they were, indeed, searching for and destroying enemy diesel submarines that might be in that area, and in general the bottom conditions and sonar performance they are likely to encounter.

In addition to that, because there is a buffer zone between the firing range and any civilian activity on the island of about 11 miles, the marines can be doing their ground combat maneuver, their landings and so forth in that buffer zone, or what we call the maneuver area. While at the same time, even though it is not a 100-percent exactly as it would be in combat, aircraft and ships can be doing their surface fire support or the aviation ground combat support in such proximity that it mimics as realistically as you can get it, the proximity of the landing of those weapons close to friendly troops.

Senator INHOFE. Admiral, I thank you for that answer. My time has expired, but on the second round General Hanlon, I would like to go to you with some of these. I was a product of the draft. I remember so well the live-fire I crawled under and how different that was from inert.

Senator Kennedy—well, first of all we have Senator Nelson who has arrived. Senator Nelson, did you want to make an opening statement? All right. We will get to you in just a moment.

Senator Kennedy.

Senator KENNEDY. Thank you very much, and I want to thank my good friend Senator Akaka, who is always accommodating, generous and courteous for his willingness to yield at this time. I again reiterate my appreciation, Mr. Chairman, for having this hearing today.

I am impressed by the comments and the statements that have been made by our panel today. It has not always been this way. This is something which I think is of importance, and I think we want to build on the lessons of the past so we can avoid some of these problems in the future. Three years ago, the Army was unresponsive to the challenges we were facing at the reservation on Cape Cod. It was only after EPA succeeded in their administrative orders that we found out about the considerable amounts of contamination there. It was after these studies that the Army finally acknowledged this contamination and really got involved in this whole process.

A concern that many of us have now, even with the Army's statements and comments that they will work to clean up the contamination, is that somehow the environmental quality of the region's drinking water will suffer permanent harm. The Cape's drinking water shortfall is estimated to be more than a million gallons a day by the year 2020. This is not a maybe. This is a fact. It is very important that the new drinking water wells that they are drilling will be filled with clean, usable water.

Although, General Van Antwerp, in his own testimony said that Royal Demolition Explosive has been detected in groundwater under MMR's impact area, there is no evidence the current drinking water supplies are affected. Unfortunately, it is moving towards the town of Bourne. They are moving toward that area, and while we wish we could be confident that the contamination is going to be controlled, and we wish that we could be assured that we are going to have the resources to be able to try and clean it up, we are not. That is a larger issue, and is something that this committee is going to have to deal with.

I know that there are scarce resources for training, preparedness, and readiness. But, we have to be involved in this kind of undertaking—environmental cleanup—to ensure that training will be available in the future. This needs to be a priority. We have to try and find ways of trying to deal with this, and, unfortunately, it does not come on the cheap end. The best estimates for the cost of UXO Cleanup is in the billions of dollars. It is enormously important that we start to deal with this now.

I want to mention, Mr. Chairman, the good work that the Army is doing at the present time. They are doing a much better job having established a range sustainment program to look into how to manage the range. The Army has also taken the step of establishing a steering committee comprised of the Vice Chair of the Army, the General Office of Training Acquisition and the Environmental Division to continue to work through problems at MMR. Locally, the Army is working with the community doing education programs for children and others. These programs help to build trust.

In the brief time that I have left, I want to mention one particularly impressive program that the Marine Corps has, General Hanlon. As I understand it's at Twenty-Nine Palms, the Marine Corps has a very extensive program for policing the various ranges and clearing them of UXO. I think it is something of which we ought to take note.

I understand you have developed a computer software program for that site's management, which has a wide range of different uses. It provides correlation of explosives used, the area cleared, the ordnance found, vehicles, fuel, and the manhours used for range clearance operations. Your UXO environmental management program combines this with post-exercise cleanup and regularly scheduled range cleanup activities throughout the year.

This is enormously impressive. I have not visited there, but I have read about it in your testimony. This program is important, especially when you realize that, in a lot of these instances of old ranges, there is difficulty in just knowing where these old munitions are stored. The Services do not have good information about them, and in many cases, the shells are obviously deteriorated and are leaching explosives into the ground or water supplies.

This is what seems to be happening currently at MMR. I would like to try and look down the road toward the future and how we can deal with this problem. Perhaps you could just make a brief comment about what the marines have decided to do on this, and if you or other members of the panel could indicate whether there are lessons that have been learned here that could have application to the other services.

General.

General HANLON. Thank you, Senator. Yes, sir, you are right, you described exactly the site management model, the UXO model that they have at Twenty-Nine Palms.

The reason the Marine Corps went to this model is because Twenty-Nine Palms is a really unique base for us, Senator, different than our other bases. You can just picture in your mind about 900,000 acres of desert maneuver area, and there is no set impact area. In other words, the units that go out there literally fire and maneuver throughout the entire complex.

Since you do not have a contained impact area, when an exercise is done, there has to be a method to go back and literally police up the area to make sure you did not have any unexploded ordnance or any other debris out there that should not be there. So they came up with this model, which was a way to go ahead and track the exercise.

From the moment the troops left the point of departure to the time they went through the entire exercise, everything that was fired was tracked through this model. Then when the exercise was done, the Explosive Ordnance Disposal (EOD) personnel would then go out using this model to locate where they best thought this ordnance would be.

They would then go out and sweep the area and collect that which had not exploded, or other kinds of metal debris. They would then collect it and either blow it in place or bring it back to another site to be disposed of. They would also take a lot of the metal that was recovered and go ahead and actually recycle it. It has worked very, very well at Twenty-Nine Palms because of the nature of that particular base.

For example, sir, I was speaking earlier about Camp Pendleton. It is a little bit different at Camp Pendleton, because we have a set impact area that we fire into. Nobody else goes in there. Then about twice a year, Senator, we close the base down and go in and sweep the area and look for ordnance, and so I think your point is well-taken, sir. I think this is the utilization of modern technology to help us. It is something that there is no reason why we cannot migrate that into our other bases, and certainly it would be available for our sister services to use as well, sir.

Senator KENNEDY. I thank you. I think there are important initiatives in this area that can be helpful in finding future solutions. I thank the chair.

There are four members of the full committee that wrote the Secretary of Defense in January urging that he establish an UXO clean-up account. We know that there has been a transition, so we are understanding, at this time, about the development of this type of program to try and respond to these kinds of concerns.

I would hope that all of you are being asked to submit your recommendations to the Secretary regarding this idea. It has been several weeks now since we sent the letter, but the need is there and I do not think it is going to go away. We are going to have to come to grips with these issues sooner rather than later.

I hope that we are not—speaking parochially now, but this is important that we in Massachusetts are not going to be held hostage because of the impression that whatever is done there in terms of clean up could be used as a precedent to clean up other areas. This would not suit either the vital health needs of the people of the Upper Cape area or the DOD's interests.

I thank the Chairman for this hearing on this very important public policy issue, and I thank him for his involvement, and for the courtesy of letting me sit in.

Senator INHOFE. Senator Bunning.

Senator BUNNING. Thank you. I apologize for missing part of it, but I had some meetings.

I find it amusing, I guess I should not, but I do, that Senator Kennedy comes as a nonmember of the subcommittee, and you all kiss his ring before you go ahead and discuss the important matters that are before us.

Some of us are new to the committee, but have a deep and abiding interest in what is going on. We have some real, real problems in the Commonwealth of Kentucky, and I want to address them with the Army.

At Fort Knox we train, as you well know, soldiers to maneuver and fire tanks. It takes lots of room to do that, and we are the home of the mounted warfare——

Senator KENNEDY. Would the Senator yield for a personal privilege?

Senator BUNNING. I would be glad to.

Senator KENNEDY. I want the record to show I did call the chairman yesterday and asked, as a member of the full committee to attend this hearing, because I was particularly interested in it.

Senator BUNNING. Absolutely. I understand that. I do the same thing when I have a deep concern.

Senator KENNEDY. So I want the record to show that I am very grateful. This is not a new issue for any of these gentlemen in my state, so I appreciate all of their courtesies. But I wanted to again state that and I just want to make sure that the Senator understood, and if he has any personal problems with that——

Senator BUNNING. If I had a personal problem with it, I would come to you personally.

Senator KENNEDY. Thank you.

Senator BUNNING. You are welcome.

Let us get back to Fort Knox. It has a current tank range, and some training problems. Fort Knox wants to expand its training range into 2,000 undeveloped acres on the base, just beyond the current range. However, this would allow range activities to occur in undeveloped wilderness areas and closer to residents in Meade and Bullitt Counties of Kentucky.

We have had local officials and residents in these counties concur about the environmental impact and noise levels surrounding the expansion of this training range at Fort Knox. I am asking you, as the person who the Army has sent here to explain how important it is for the safety of our troops to train under live-fire, where do you draw the line on the safety of people versus the safety of the snail darter, or whatever might be out there?

General VAN ANTWERP. Senator, your point is well made. That is the balance that has to be struck, that in order to prepare our soldiers for the job they have to do, you have to be able to do live-fire and maneuver. Incidentally, I think the land required in the future is going to be even greater than today.

As we look at the force of the future, we are looking at a more mobile force, a faster force, more vertical with aviation——

Senator BUNNING. But I need you to answer the question. I need you to answer—when do you make the decision? If the decision being made is that you have to have those 2,000 additional acres to train your troops properly, when is the decision made to go forward with that additional 2,000 acres, you as the Army?

General VAN ANTWERP. As the Army, when we make that decision to go forward, it would have to be in partnership with the regulatory agencies, but in those forums. That is where we would try and strike the balance between protecting—in Fort Knox' case, they have the Indiana bat, for instance, which there are restrictions, that we have to strike the balance there. We would make the absolute strong case——

Senator BUNNING. The Indiana bat is more important than the training of our military people when you send them in harm's way?

General VAN ANTWERP. No, sir.

Senator BUNNING. That is just about what you said to me.

General VAN ANTWERP. My point is that we would have to look at the habitat requirements by law.

Senator BUNNING. Would you not come to us and say, hey, by the way, the bats are not as important as the people?

General VAN ANTWERP. Sir, I think we would come to you to look for that balance, and we would look—the first question that is always asked of us, what other mitigation, what other areas can you set aside?

The description I said of Fort Bragg, buffer land, that provides habitat so we can train properly in our training areas. That is exactly what we would try and do in the Fort Knox region to determine whether there is other habitat that could be set aside so that we could properly train and get the additional land.

Senator BUNNING. If there were other areas that could be set aside we would not be looking at the 2,000 acres at Fort Knox to expand the range so that we could train properly those people that need to send into harm's way.

The fact that there are bats and other problems on the land has to be mitigated to the point that either you have to take the training somewhere else, where you have enough range, or you are not willing to fight, as the Army, for the range in its present place because there are mitigating circumstances.

General VAN ANTWERP. We are willing to fight. Sometimes there are restrictions at local installations that we can only do that training at one of our training centers. That is not optimum. We need to be able to train at the local training site, as you suggest. So I think we would come back to you for the balance on that. If we found that it was so encroaching upon the training that we need that we have to come back to get relief, I think we have all talked that there might be that occasion.

Senator BUNNING. Well, my time has expired and I have not even begun to ask the questions I wanted to, but I will concede to the chairman.

Senator INHOFE. Senator Akaka.

Senator AKAKA. Thank you very much, Mr. Chairman. Again, I want to thank you for this hearing and thank our witnesses for being here and for your testimony. I firmly believe that all of us, you and the Senate, have intentions of using good faith efforts in trying to meet the challenges that we are discussing. There is no question, and it has been mentioned time and again, that we must have training for our troops before they are sent into harm's way. I think there is no dispute in that.

What we are looking for are ways to try to work out some effort and working in this case with communities and trying to carry on these training programs. I would like to address this to the Admiral. The impact of community concerns on the military's ability to conduct training is perhaps more acute on the island of Vieques than anywhere else, and as we all know it has been a hot subject, one that Puerto Rico has had. It even impacted the elections out there, and this is how in a sense, the community became passionate about this.

The last administration placed a high priority on reaching an accommodation with the Puerto Rican Government that would permit a resumption of live-fire training on Vieques. As we know, there is an expected referendum to be held there, and I think we have a feeling that if it is taken—and let me use the Navy. The Navy loses I think in that referendum, so we need to keep that in mind.

It appears this agreement may now be falling apart because of that. My question to you is, what steps are being taken today to address concerns raised in Puerto Rico and enable the Navy to resume live-fire training in Vieques? Who is in charge of this effort on a day-to-day basis?

Admiral AMERAULT. Yes, sir. Those are extensive questions and are very good as well.

You wanted to know who is in charge on a day-to-day basis, and what steps we are taking. The questions at Vieques are many and multifaceted. The day-to-day in-charge nature of the answer is that this is a question that is being worked on at almost every level in the Navy. The Secretary of the Navy, now the acting Secretary of the Navy himself is involved with Vieques almost on a daily basis.

The question of Vieques has already come before the new Secretary of Defense. The most intimately involved officer is a Rear Admiral Green, who is on the ground in Vieques, or actually in Puerto Rico.

After that, the day-to-day managing of the situation is by the Commander in Chief of the Atlantic Fleet. That is because the range in Vieques and the training it represents is in his particular area of responsibility. He is the gentleman whose job it is to put forward ready and trained forces in the Atlantic Fleet to go to the warfighting CINCs in the Mediterranean and South America and the Middle East and the Atlantic. So he is actually in charge of what we are doing there, with advice support from the Chief of Naval Operations Staff, which is me, at the Directorate of Logistics and Readiness.

He is also getting support from the Secretary's Office in the political arena, so I would say there is an overwhelming amount of concern, work, and attention on the Vieques issue. We are addressing every one of the community concerns with regard to all of the potential or implied damages to any of the environment there, in terms of water and the water pathway, air quality pathway, soil, whether or not the effect of weapons in the water causes some kind of an acoustic problem which causes some kind of disease, whether there has been any change in the rate of cancer and so forth on the island. We are very much involved in finding answers to those questions.

Many of those we think can be answered without—or by saying there is no risk. We think that is going to be the ultimate answer to those questions, almost 100 percent of them. However, we are very interested in finding the scientific answers, or in refuting answers that are not based on real science.

Other concerns such as the welfare of the community in terms of its ability economically to survive, because, say, the maneuver area or the weapons ranges are adjacent to it, are issues that we have over a number of years been working on with the community in Vieques. Sometimes with some success and sometimes without notable success, but we have been working to some degree on those issues for quite a long time. However, we have heightened that activity tremendously and there are funds that we have pledged to be able to use to help that community attain more economic viability.

In the past, there have been efforts by the Navy to bring in businesses from the outside. Some of those have met with success and some have not. Sometimes, because in Puerto Rico there has not been the ability or the resources from Puerto Rico to put in, for instance, ferry service and other things to service the island.

We have been very attentive to the environmental condition of the island. We have been, we think, a superb steward of the lands entrusted to our care. In fact, we think that the beaches and the mangrove swamp, mangrove areas and so forth that we have stewardship over are very, very well-maintained and in a near-pristine condition. We have been very attentive to the sea turtle population in the island. In fact, that population is growing. There were 17,000 hatchlings that were released back to the environment since 1991 because of the program by the Navy.

We take mitigation efforts to be sure that we preserve the turtle population on the beaches before any marine activity in terms of landing on the beaches. We think we are addressing those problems very extensively, and completely. However, we do not have an agreement with Puerto Rico on that score.

I do not know if there are any other things I can answer.

Senator AKAKA. Well, my time has expired, but let me ask, have you more recently tried to, or made an attempt to discuss any of these challenges with the present Governor?

Admiral AMERAULT. Sir, I personally would be in danger of potentially misspeaking. I do know there has been a recent meeting with the Secretary of Defense and the present Governor.

Senator AKAKA. Thank you very much, Mr. Chairman.

Senator INHOFE. Thank you very much, Senator Akaka. I would also add that I have heard very complimentary things about Admiral Green, and reestablishing relationships that perhaps were not as good as they should have been, so I would like to get that comment in the record here.

Admiral AMERAULT. Might I say, sir, that we had a similar issue with the island of Vieques over the installation of a major radar installation about 8 years ago in which we did work with the community and made that installation a fact. It is now operating, and so we have had a history of working with the community.

Senator INHOFE. Thank you, Admiral. Welcome to the committee, we would say to our friend from Nebraska, Senator Nelson.

Senator BEN NELSON. Thank you, Mr. Chairman. It is a pleasure to be here, and I want to commend the military on the environmental stewardship that you are undertaking as part of the overall commitment to public safety as well as to the public good.

I was taken by the desire to try to create a balance, General Van Antwerp, because I suspect that almost everything that we do these days has some balance associated with it. The balancing act is more difficult in certain instances than at other times. But to try to balance the percent of the budget that goes for prevention and cleanup of the environment versus what is necessary for training, the challenge to comply, to be a good steward of the land and of the water, and the balance that is required between having the right kind of training and simulated training.

Do you feel that you are trading, or jeopardizing the security of the military by trying to comply with environmental requirements?

General VAN ANTWERP. Senator, I think up to this point we have been able to manage it. As we do our range sustainment models and our management plans in the future we are finding it more and more difficult. The encroachment is greater and greater. We do not want to get to the point, as discussed with Senator Bunning, that we cannot train at our local installations and only have to do it at a few places where it is allowed. Last year, we spent about \$17 million on the Endangered Species Act. That is a lot of money.

When you look at unexploded ordnance, the bill for that could be absolutely enormous. What is being done out at Twenty-Nine Palms, that costs money to make those sweeps through after live firing exercises. That comes out of the very same pot that we do maintenance of our installation and its facilities, so the strains are becoming greater and greater. I could easily see in the near future that we would get to the point that we are not able to train as we want to because of clearance requirements or endangered habitat requirements.

Senator BEN NELSON. So there is a danger signal there for all of us to be aware of and be concerned about. I do not think there is anybody sitting at this table who wants to ignore the requirement on the one hand, and on the other hand we do have to strike a balance to make it work.

I wondered also if I might ask if you trade—and I know there is a lot of competition among the branches of the military, as well there should be. Esprit de corps is absolutely essential, but do you share information about what you are doing for prevention and cleanup technology so that you are getting the benefit of every other experience that one branch encounters versus another branch? I suspect water issues may be more in the province of the Navy but not necessarily exclusively. I just wondered if you are sharing technology.

Admiral AMERAULT. Yes, sir. Our water issues are different, because they are sea water, and, in fact, each of us has a lead service aspect for a different aspect of unexploded ordnance. So we are working in different areas. Ours is the maritime area, and so we are very concerned with that, and leaching of chemicals in deep water, what those effects are when the ordnance lands there and so forth. But there are a lot of difficulties in finding unexploded ordnance, particularly in a range that is a very wide range.

You cannot just rely on something like a metal detector. A lot of it is lead. A lot of it is metal that is buried deep in the ground because of the velocity of the impact and bombs and so forth. It is not a simple thing. We spend a lot of money on cleanup in some notable areas, and one of the difficulties is that that cleanup sometimes has to be absolutely iron-clad guaranteed not to allow an injury of someone who uses that one-time range for other purposes.

You may have to excavate to 4, 6, 8, 11 feet, basically, take out all the ground and sift it or whatever, and put it back. It is very extensive, and very expensive, and you are right about the competition for resources. When you cannot train in some place, you have to balance the fiscal constraints of the numbers of munitions you have, in fact, to use for live-fire training because we are constrained on our budgets at the present time with the numbers of those we can buy, training days, now personnel tempo, which is costing us in the recruiting and retention arena, and the war for people, which is another aspect of this as well, and flying hours and the cost of those. It is a very interesting tradeoff between this kind of training and the other things we have to pay for.

Senator BEN NELSON. One further question. Are you finding people with the kind of experience and/or with the kind of educational background and knowledge in the technology among your recruits, or among the private contractors you have?

Admiral AMERAULT. For things like unexploded ordnance and disposal and so forth we all tend to use similar contractors who are experts in the field, and we tend to share it specifically because we often use the same contract or the same contracting methods, so I think there is a sharing of the technology.

General VAN ANTWERP. Sir, if I might just briefly say, there is a steering group at the OSD level that all of us are members of that talks about unexploded ordnance, where at the last meeting we had a lay-down of the latest technologies for clearance. We find ourselves most aligned with the marines, because we have the majority of the small arms and ground-type things. The Army has, of course, a big piece of this. About 90 percent of the unexploded ordnance out there is ours, so we have got a major part of this problem, but there are steering groups to share the lessons learned, and we are working together on that.

Senator BEN NELSON. Well, thank you very much. I appreciate it.

Senator INHOFE. Thank you, Senator Nelson.

Let us start off where we ended, General Hanlon, you did not get a chance to respond to my question, and specifically, the live-fire portion, and how that contributes to the training, and how this translates into perhaps lives.

A lot of people are aware of when we make these east coast deployments that go through the Mediterranean and on down around to the Persian Gulf, in fact, the danger, as we found out from having to go in, but when you get there the likelihood of being in a combat environment is about 50–50, so with that in mind, why don't you go ahead and respond.

General HANLON. Yes, sir. Thank you, Mr. Chairman. I thought the Admiral a few minutes ago did a wonderful job of talking about the importance of Vieques to the training of our MAGTFs, but as

you know, thinking about your question, sir, my first response is, what you do not want to have happen is for a marine to have the experience of firing live munitions or hearing live munitions for the first time in combat. That is not what you want to have happen.

Going back to my comment to you about, we train as we fight, I think it is essential that our marines understand how to utilize and properly employ live munitions. In my comment, I mentioned that we are an integrated combined force, that is infantry, artillery, close air support, tanks.

Each one of these systems has their own individual effects on the target, but when you bring them together there is a synergy that takes place, and an even greater effect, and that is what it is all about, learning how to use those combined arms at the right time and in the right place. It is a timing issue. You have got to bring in your naval gunfire, your artillery, your air on a set sequence, because if you do not, something catastrophic could happen.

Having spent many years, sir, at Fort Sill in your area of responsibility (AOR) in Oklahoma, I will tell you that one of the things that you have to do, you have to learn how to take a 155 round in the dark, how you put the right powder charge on it, how you put the right fuse setting on it in the cold, and in the heat, and in the daylight or at night. You have to get that round in the tube and down range.

The forward observer has to be able to adjust that round on the target and do it quickly, and you have to go out and experience and do that. It is just something that is part of what we do. We use simulation, we use inert weapons when we can, but you can only do so much with that. I mean, there comes a point where they actually have to go out there and do it for yourself.

A company commander, when he has got his unit out there, he can sit in a classroom and he can talk to his troops all he wants about maneuver and everything else, but until he physically gets out there in the field with his troops in the fog of war and the confusion and the heat and everything else, and actually commands and controls in the attack or in the defense, and experiences that, I mean, you cannot duplicate that in the classroom. You have to physically go out and do it.

I think another reason that it is important to do this, sir, is because it is not just that you want to get it right in combat, but it is how you prevent fratricide, by going out in a training environment and being able to practice time and time again how you use live weapons and ammunition. I believe that prevents unintended consequences in the battlefield, either in terms of collateral damage, or in terms of fratricide with your own troops.

I use an analogy with my own people sometimes at Camp Pendleton, and that is, that is the reason the football coach Monday through Friday has his ball players go out and hit and tackle and block, is because they have to know how to do that and how it feels, because when game time comes on Saturday, I mean, it is too late to start then.

So I believe that the reason that the utilization of a place like Vieques is so crucial to us is because when you take the MEUs that come off the east coast, now, they are getting ready to go on a 6-month deployment with the fleet. It is at that point, kind of a grad-

uation exercise, they come together, they have this big exercise at Vieques where they bring all of these skills together as part of the final certification before they go off and deploy with the fleet.

The minute they leave and start sailing east, anything can happen anywhere on the globe, and they may find themselves on their way to a conflict, and I will tell you, sir, having done a couple of tours in Europe a number of years ago we had access to training places in Turkey and in Greece and in Italy and places in France. We do not have access to those places like we used to, so it is harder in theater to find places to train your troops, so you have got to get as much of that done before you deploy.

Did that answer your question, sir?

Senator INHOFE. It does, General Hanlon, and in fact when this discussion started—you mentioned Capa Teulada. I went over to Capa Teulada to see, can you get this kind of training there. Well, on some days you can, and we are down to 22—at least the last time I looked, to 22 days a year that we could use that range, and that would only be where they agree, their country agrees with our mission, and you and I can both think of some areas where they might not agree.

General HANLON. Yes, sir. In the case of Capa Teulada, that is a main training base for the Italians, and so they have got their own units coming and going through there, so what we try to do is sequence our own units into their training, and if we are lucky we can find a gap that gives us access. If we cannot, then we are out of luck, sir.

Senator INHOFE. Senator Akaka, this kind of addresses your concern, too. If there were another place it would be different, but there is no other place. We have been to all of them, and as a matter of fact, in Northern Scotland when we were there there is an article in the paper that said, wait a minute, if they are not willing to have this live training on their own range that they own, why should we let them do it here, and there is very strong suggestion that they are not going to let us. It is in jeopardy.

Now, Admiral, you mentioned in your remarks, to make sure I properly understand and the record does reflect this, when your pilots take off from the carrier—and incidentally, the football analogy we used was used on U.S.S. *Eisenhower* when we were out there by one of their pilots, the same thing. They have to go through civilian air space, they have to change their formations, they have to go through—and as a commercial pilot, I have been for 40 years, I know you have to go through thinking about that even as long as I have been doing that, and then to reprogram yourself back into a military—is this what you are getting at?

Admiral AMERAULT. Yes, sir, and the closest, the only place, really, we can do the kind of combined arms training that we do at Vieques in two places, one is Vieques, and one is where the General is on the west coast in conjunction with San Clemente Island, that combination, but Vieques is by far, I think the best in the world, because of the fact that the air space is less encumbered, and you do not have a lot of that.

We have already got the clearance activity, the radars, the long-range radars sited high, the kinds of things to maintain the clearances.

Senator INHOFE. I do not want this to dominate the discussion, but when you are talking about encroachment, this is the area with the most multiple encroachment, because you have endangered species, you have all these other air problems, and General Buchanan, I am sure you will agree with this, as you are having to use fewer and fewer available live ranges for your operations, too.

General BUCHANAN. Yes, sir. Your comment about, as you accommodate this, where I was a commander we were able to take off and within about 15 miles you were really in warning air space, so you could fly as you were going to fight right away. Other places around the states, sir, are not as fortunate in their training ranges. They are up to 150 or 200 miles away, and in that transmit time then you do have to change in flight procedures. You get to the air space, you have to take a moment to kind of switch over and take off your civilian transit hat and now put on my go-to-war hat, and when you return you have to do the reverse as you go through.

Senator INHOFE. I appreciate that. My time has expired. Senator Bunning, Senator Akaka said he would defer to you.

Senator BUNNING. Thank you. I just wanted to bring up one more problem you have in Fort Campbell. We fly troops from this base airfield for training and missions abroad. In fact, we are going to send 3,000 people off to Bosnia on June 1 from there. We have a great airfield there.

The problems now have developed that some developers near Fort Campbell airfield want to construct high hotels and gas station signs visible from the highway near Hopkinsville. The Army says this poses a safety threat to arriving and departing aircraft. How does the Army plan to address this problem, and you can take that as the first question.

When will the Army complete its sustainable range management plan? Will you rank in order those posts which have best and biggest problems with encroachment issues? I hope in your plan that you will offer and recommend specific solutions to address these issues, because only then can we help to lift the burden resulting from these matters to ensure that we do have sufficient readiness.

General VAN ANTWERP. Yes, sir. Thank you for both those questions. I will take the first one on the Fort Campbell Airfield. There were dealings—and I actually have our lawyers involved in those issues that would restrict our ability to take off and land and use the full extent of that, because we obviously need that as one of our power projection platforms, as one of our crucial divisions, and we need the space, so we are working with the local population, working through the lawyers to make sure that we do not have anything that will restrict the use of that air space.

Senator BUNNING. They are doing it right at the end of the runway?

General VAN ANTWERP. Yes, sir, so you do not have the overflight, and you do not have to go up too quickly or use the full extent of the runway, as I understand the problem. So it will take some time to work through, but we are going to stand our ground on that. We need to have that air space utilization to be able to take off with the loads that are required, so that is a very important issue not resolved yet.

The second one, I would ask if maybe General Webster on the sustainable management—

General WEBSTER. Sir, in the sustainable range plan this is something we are working on over time, and I do not expect it will ever be completely done, because as new laws are passed and new species are identified, and as technology improves, we will continue to look for opportunities to apply that technology to be able to train better.

However, we do expect to prioritize our installations and the requirements on each of those installations so we can tell where the highest priority areas are.

Senator BUNNING. When would you say that would be done?

General WEBSTER. Sir, I will have to get back to you on that. I do not have the end state right here.

Senator BUNNING. In other words, let us say the status quo is maintained on new laws and new problems. You do have facilities. You know the facilities, you know the training ranges, and you are trying to prioritize. You do not have any idea when that would be completed?

General WEBSTER. Sir, I know one part of the sustainable range management plan we have is to get a complete inventory of any ranges where we have fired, or where any of our services that are on Army installations have fired ammunition before, and that is supposed to be completed by 2003. That is our complete end-to-end inventory. I do not expect that is the same time that we will finish our plan, but I know that each installation is required to put together a sustainable range management plan.

Senator BUNNING. Can you at least give me an idea, or this subcommittee an idea of when you will do the current installations and get back to the subcommittee before you get the current one done?

General WEBSTER. Yes, sir. If I could take that for the record I will get that to you.

[The information referred to follows:]

ARMY SUSTAINABLE RANGE MANAGEMENT (SRM)

Army Approach: The Army must improve its management of ranges and training land in order to sustain readiness in light of increasing encroachment challenges. The Army's Sustainable Range Management plan is based on three tenets:

- (1) Develop and maintain the best Information—establish solid baseline data on all aspects of ranges—their operational characteristics as training facilities, their physical characteristics as real property facilities, their characteristics as part of the natural and cultural environment, and environmental impacts to training.
- (2) Integrate Management—across the three disciplines that directly affect ranges, training, range operations and modernization; facilities and installation management; and environmental management.
- (3) Establish Outreach—educate and inform the public, decision-makers and influence leaders to explain why we must conduct live-fire and maneuver training, what impacts training and readiness, and how we are moving to a more sophisticated management approach to ensure that the concerns of the public are addressed. Form partnerships with local governments as part of this effort.

Army Live Training: Army live training is unique. Live training is required across the spectrum of Army missions. It is conducted as part of Initial Entry Training, to provide basic soldiering skills. It is conducted in units of both the Active and Reserve Components to hone collective skills. It consists of ground maneuvering by combined arms elements, and live weapons firing of both individual weapons and

weapons systems, as well as of units employing multiple weapons and weapons systems.

Army Ranges: The Army controls an extensive range infrastructure to support its live training requirements. Army “ranges” consist of fixed firing ranges for the full array of Army weapons systems, including small arms, crew-served weapons, and major direct and indirect fire weapons. This also includes Army aviation systems. Ranges also consist of impact areas (both duded and non-duded) onto which firing ranges are oriented. Ranges include maneuver areas where force-on-force training takes place. Finally, ranges include other live training facilities, such as Military Operations on Urban Terrain (MOUT) training facilities. The Army’s range infrastructure is complex. Over 430 installations and sites with “ranges” currently exist.

Encroachment: Army ranges are experiencing increasing “encroachment.” Encroachment is the sum of external factors, impacting ranges and land, that have the potential to limit the Army’s capability to accomplish its mission and maintain ready forces. Such encroachment stems from a variety of environmental, social, political and economic influences. Impacts include, but are not limited to:

- Restrictions on the locations available for test and training
- Restrictions on times and durations available for test and training;
- Reduced effectiveness of testing and training activities
- Restrictions on the weapons systems, equipment, and ammunition used during testing and training.

Sustainable Range Management (SRM) Scope: Army ranges are a combination of live training infrastructure, installation facilities, and the environment. Sustainable Range Management (SRM) in the Army is an integration of training, facility and environmental management to ensure that viable assets exist to support the Army’s Title 10 missions.

Army SRM Objective: In light of increased encroachment, maximize the capability, availability, accessibility of ranges and training land to support doctrinal training and testing requirements, mobilization, and deployments under normal and surge conditions.

Capability: The capability of Army ranges is based on their functionality in supporting live training. Capability components include requirements and operations.

- **Requirements and Range Modernization:** Capability requirements are derived from doctrine using the Army’s Range and Training Land Program (RTLTP) standard methodology. This methodology considers forces assigned to, or using, installations to identify range and land requirements from primary doctrinal sources, notably Training Circular 25–1, for land, and 25–8 for ranges. Based on this doctrinal requirement, installations determine the need to retain, or modernize ranges. Modernization can be accomplished by upgrading existing ranges or constructing new ranges. The same consideration is applied to land to identify existing critical training parcels, or the need to acquire additional land. As new ranges are built or existing ranges modernized, the Army must integrate improved designs derived from sound engineering and environmental research. New range designs will contribute to mitigation of encroachment, particularly in the areas related to the regulation of munitions.

- **Operations:** Ranges must be operated and managed in a manner that ensures safe, doctrinally sound training. Range management also includes allocation and scheduling to meet the needs of users in an equitable manner reflecting the commander’s priorities. Operations includes a full awareness of use, and consideration of capacity—training and operational; as facilities; and as a part of the environment. The Training Requirements Integration (TRI) component of the Army’s Integrated Training Area Management (ITAM) program is central to this allocation and scheduling process. The Army Testing and Training Area Carrying Capacity (ATTACC) methodology provides an indicator of training land environmental capacity against various training loads. The Range Facility Management Support System (RFMSS) provides the automated capability needed to support scheduling and other range operations tasks.

Availability: Availability of ranges stems from accountability, assessment of facility condition, maintenance, and environmental management.

- **Accountability:** Ranges are Army real property and are accounted for as such. Each distinct range “type” is identified with a facility category code. Each code, in turn, represents a standard configuration that supports a distinct set of training tasks. Accountability is extended to knowledge of the scientific characteristics of the range, to include soils, vegetation, etc.

- **Maintenance:** Maintenance of Army ranges is accomplished through two means. The Army's Sustainment, Restoration and Modernization Program generates a facility maintenance fund based on the range inventory and characteristics. The Land Rehabilitation and Maintenance (LRAM) component of the Army's Integrated Training Area Management (ITAM) program provides a fund to maintain training land.
- **Assessment:** Range conditions are assessed using three elements of the Army's Installation Status Report (ISR) process. As facilities (ISR Part D), ranges are measured against their operational capability to meet doctrinal training requirements. As services (ISR Part III), range operations are assessed in terms of adequacy to support commanders' priorities and to provide safe operation. As the environment (ISR Part II), ranges are assessed in terms of environmental compliance and stewardship, as well as in terms of environmental impacts on live training execution.
- **Environmental Management:** Environmental management is a significant challenge on Army ranges. Environmental management for ranges includes elements of all four environmental program "pillars"—conservation, pollution prevention, compliance and restoration. Each contributes to a varying degree to sustainable ranges. Because of the unique characteristics and effects of Army training, many of the traditional management practices within the pillars are insufficient or inadequate requiring investments in environmental research and development (the Environmental Quality Technology program) to provide new techniques and assess Army-unique effects. The area with greatest potential for increased environmental management is that associated with munitions use on ranges.

Accessibility: Accessibility to ranges depends on their management through all the means already discussed above, and the ability to demonstrate effective management so that external pressures do not create restrictions to the uses required for readiness.

SRM Implementation: The Army's ability to implement Sustainable Range Management depends on its ability to meld the three management programs—training, facilities and environment—into a cohesive whole that will ensure the availability of ranges to support Army live training indefinitely. At HQDA, SRM has begun through three initiatives:

- The creation in June, 2000 of the Army Range Sustainment Integration Council (ARSIC), an Army Staff "council of colonels" representing all staff elements with an interest in ranges and supporting programs. The ARSIC is co-chaired by the Chief of Training Simulations, Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPs) and the Director of Environmental Programs, Office of the Assistant Chief of Staff for Installation Management (OACSIM). The ARSIC mission statement is as follows:

The Army Range Sustainment Integration Council (ARSIC) is a HQDA level Council of Colonels and Integrated Process Team that supports Army sustainable range management by developing recommendations for policy, positions, and action plans, and by coordinating, integrating and focusing the Army's many activities related to sustainable range management.

- The Active/Inactive Range Inventory: Begun in August 2000, this effort is managed by the Army Environmental Center, under the direction of the ACSIM, and supported by the Training Directorate, ODCSOPS. This inventory will provide a "ground-truth" baseline of the Army's extensive range infrastructure. It will be a foundation element of the Army's SRM plan.
- The Army's Sustainable Range Management Plan is being developed under the direction of the ARSIC. This plan will evolve to a new training Army Regulation that will describe the range management interfaces between training facility and environmental programs.
- Implementation timeline:
 - September 1: Draft HQDA Level Sustainable Range Plan.
 - September 1—September 2: Convert HQDA SRM Plan to Army Regulation in 350 series (replaces AR 210–21, Range and Training Land Program, and AR 350–4, Integrated Training Area Management). Supplement new AR with Department of the Army Pamphlet (DA PAM).
 - October 1—September 2: MACOMs and installations implement IAW HQDA plan and commanders' guidance.
 - December 1–May 2: SRM reflected in Army POM for fiscal year 2004–2009).
 - October 3 (+): Full implementation IAW fiscal year 2004–2009 POM.

Senator BUNNING. Thank you. Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Senator Bunning.

Senator Akaka.

Senator AKAKA. Thank you very much, Mr. Chairman.

I am very concerned about what you might highlight as communications, and I think that was alluded to in your testimony, and particularly communications between the Armed Services and the people in the area where the training is being carried out.

For the record, I would like to ask this question of all of you as to your intentions as you meet these challenges, and that is, would you agree that one of your foremost objectives addressing the issues before us today is to work as closely as possible with local communities to address legitimate concerns and ensure that we do not find ourselves at odds as we are finding in the Vieques situation? Would you agree that this would be our foremost objective?

Admiral AMERAULT. I will start, Senator. That would be absolutely the desire, our desire, and we are committed to try and do that to the maximum extent possible, and I think we will do it and continue to do it.

Our commitment, of course, has to be to our sailors and marines, but we will, and will continue to interface with the local communities to the maximum extent possible and to try to interface with the regulators to come to agreed-upon work-arounds where they do not so severely impact training that it is not worth doing, and then we will still try to work that out, but we may have to go different ways to do that.

General HANLON. Senator, I would like you to know this is something we work on very, very hard at Camp Pendleton and all of our western bases. Our community outreach is significant and substantial.

As an example, sir, I spend a great deal of my time speaking to chambers of commerce, rotaries, any kind of community organizations at all that need to get a briefing or find out what is going on not just at Camp Pendleton but in our other bases around us. I have my staff out and about all the time doing it.

We have a couple of briefs that we have put together over the last few years that we have given to the Southern California Association of Governments. We have given it to the Western Council of Governments, to the California Biodiversity Council, to anybody and everybody, to go ahead and explain not only what our mission is and our purpose for the American people, but to explain our challenges we have in being able to do our mission and how we need their support.

I mentioned earlier we have a wonderful arrangement now with the State of California. The current Governor and his administration have really reached out to the Department of Defense in that state to see what they can do in terms of how they write their own state legislation, in terms of making it more, if I could use this term, DOD friendly, and we have an active dialogue with them.

In fact, I have one of my senior civilians who actually works as a liaison from me to Sacramento, spends a lot of time going back and forth talking to the leadership of the state, and the legislature, to work these things out. They have put together, the Governor has put together, along with the state legislature, a committee they call

the California Defense Retention and Conversion Committee, which brings together a lot of the leadership from the state and ex officio members of each of the four services to get together and talk about communication issues and many other things.

So it is something we work on very, very hard, sir, and I will tell you, when I say it is continuous, it is something you can never stop doing. You have to continually be out there talking about your message, because elections come, new folks come in, and there are always new questions that come up, but the result of this I think is very positive.

In the case of Camp Pendleton I am not going to sit here and pretend that I can tell you what percentage of people support us and do not, but I can tell you the overwhelming number of people in the community in both Orange and San Diego County are very supportive of who we are and what we do, and so I think your question is an excellent one, and it is something we will continue to do very hard, sir.

General VAN ANTWERP. Sir, the Army is very committed to community outreach and to the community involvement portion of this. Some lessons we have learned from the Massachusetts Military Reservation which we are exporting has to do with these very things.

Up there, we have had multiple public meetings. We have found that that is absolutely essential, and we are exporting that to other places where we have issues, whether it be Clean Water Act issues or any of the regulatory issues.

We have embedded this in our training plan. We have a couple of courses we run, one for installation commanders, one for garrison commanders and sergeant majors, and we have embedded the community outreach and community involvement training in those.

At the MMR we found that newsletters and fact sheets on our web site were very effective in communicating as new things were found and came up, so we are embedding that across the country as we have other sites that have possible controversial issues.

Then finally we are taking that to the local schools. In addition to the forums you would think, the rotaries and others, and with the community folks, we are also taking it to the schools, so there is a strong understanding from both educators—we have two points there, to get the educators, but also to get the children involved so they understand what we do, and why we need to train, and foster that good relationship.

So we are absolutely committed, as are my colleagues here.

General BUCHANAN. Senator, I would just echo my colleagues and only add one further comment. One of the things that—I had a recruiting service some time years ago, and now, being the commander out there, what we have all seen since the demise of the draft is an ever-deeply receding percentage of our American society that has ever spent time in uniform, and so it is more incumbent than ever today that we in the military make an effort to make sure we educate those that we are sworn to defend, and make sure that they understand what the men and women in uniform do for them day-in and day-out.

So all of us are engaged as much as we possibly can in the surrounding communities and elsewhere to make sure that they are

aware of the capabilities and what their militaries are doing for them day-in and day-out.

Senator AKAKA. Thank you very much to all of you. I am so glad to hear what you said, and your commitment towards working with the communities, and I believe, with you, that this is the way to go, and as the understanding becomes evident, agreement usually comes with that also.

My time is up, Mr. Chairman.

Senator INHOFE. Thank you, Senator Akaka. Let me just say that it is very significant in the BRAC process, the base realignment and closure process. One of the eight criteria is community support, and I know that certainly in the case of my five installations in Oklahoma they have always had the highest ranking on that. I mean, this is the area where they do go out and they make their speeches.

I think very likely we had a problem surface in Vieques where that was not being done as much as it should have been, and that has corrected now.

We have a lot of things that we have not talked about, and I have a couple of things to bring up. General Buchanan, with the readiness crisis that we are facing in this country—I am talking about troop strength, quality of life—we have serious problems. One that most people are not aware of is in our modernization program.

I was very proud of General John Jumper about a year ago, who came out and said that the SU series, SU-30 to SU-37—37 is not even out yet, but 27 and 30, were actually better than anything that we had in air-to-air and air-to-ground combat already, so that makes me very much concerned about the joint strike fighter and the F-22 programs.

Now, they could be impacted by encroachment also, both in emissions and noise. Do you see that their rapid development could be impacted in terms of where they are being located and so forth?

General BUCHANAN. Yes, sir, very definitely.

As you probably know, the joint strike fighter right now, the F-119 engine as it is, unfortunately has a higher particulate matter and nitrous oxide rating than most of the 100-229 have right now, although it is cleaner in some respects.

But as we move into the next generation fighters, the performance that is required to be able to prevail in combat demands that the contractor deliver that kind of performance—and you are absolutely right, when it comes to beddown the joint program office or the JSF right now is overseeing a survey, taking a look at bases CONUS-wide to where we can begin to beddown, not just for the Air Force but for all services, and one of the big determining factors quite obviously is going to be environmental.

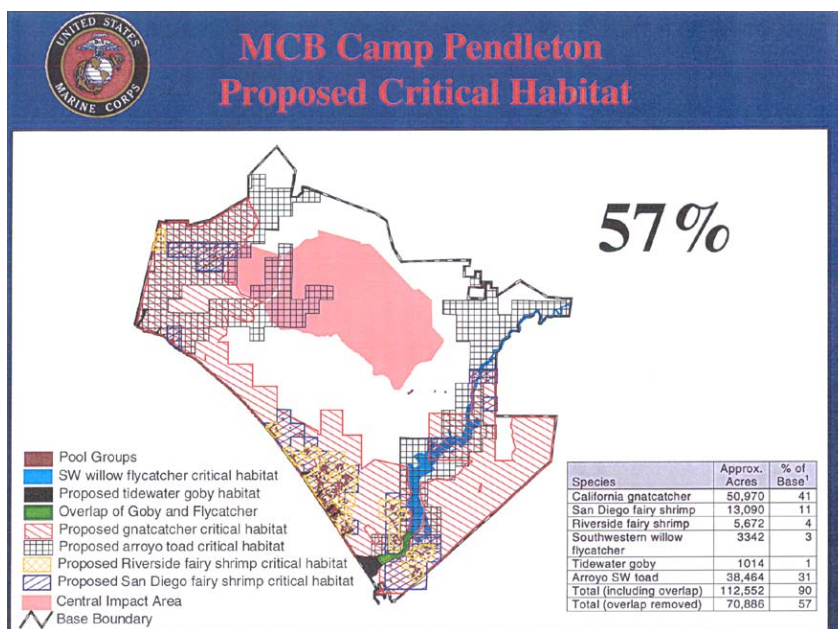
I will tell you right now that as you look at the air bases that have the infrastructure in place, that have the ranges in close proximity, all the things that you would like to have to be able to train on the joint strike fighter, each one of them is an area where it is in a nonattainment area or it is close to it and requires some kind of tradeoff as we begin to bed down the airplanes, or possibly obtain credits one way or another, but you are absolutely right, as we go to bed down the JSF's this is going to be a problem.

Senator INHOFE. Are you working on that now with both of these vehicles and trying to anticipate those problems so we can hopefully resolve them before it is critical?

General BUCHANAN. Yes, sir. As a matter of fact, there is a DOD group and we have been directed to go back and see if there is a way to try and make the F-119 engine cleaner. However, there is no way we are going to be able to alleviate all of the environmental problems, both noise and pollutants, that come with the engine itself, but there is an ongoing effort to do that, and it is one of our planning parameters right from the very beginning, so that is something we are going to try and find an offset for as we begin to bed it down.

Senator INHOFE. For General Van Antwerp and General Hanlon, in my personal visits to a lot of the training areas, and ones that come to mind right now are Bragg and LeJeune, they actually have Harriers out there where they have—this is the red-cockaded woodpecker, and they have ribbons around the trees. Tell us how that impacts the quality of training that you are trying to achieve in your various installations.

General HANLON. Sir, if I may, General Nash, if you would put that one chart up for me—I am going to put a chart up and tell you a little bit about—the one that shows the 57 percent, that one right there. Why don't you show that. I do not know, can you see that, Mr. Chairman, or not?



I brought this particular graphic to show what the impact of what critical habitat could have on a base like Camp Pendleton. The parameters of the base, 125,000 acres, goes from the Pacific Ocean right here all the way up, close to 2,000 feet up in the Cleve-

land National Forest here to the east of us, a great base, 85 percent undeveloped. This is important in southern California—most everything else is developed—so when you drive along the Interstate between Los Angeles and San Diego, when you go through that one beautiful open spot, that kind of looks like what California used to look like, then you are aboard Camp Pendleton.

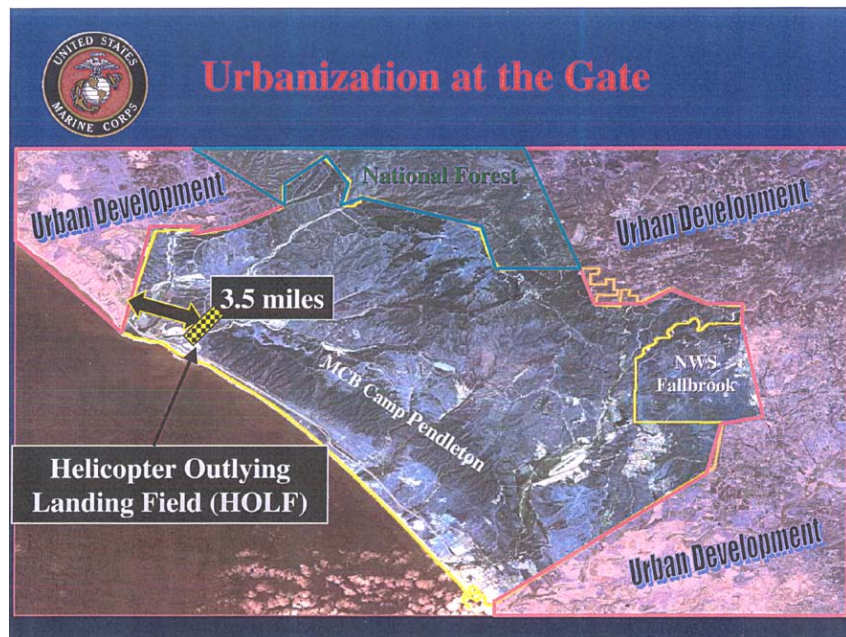
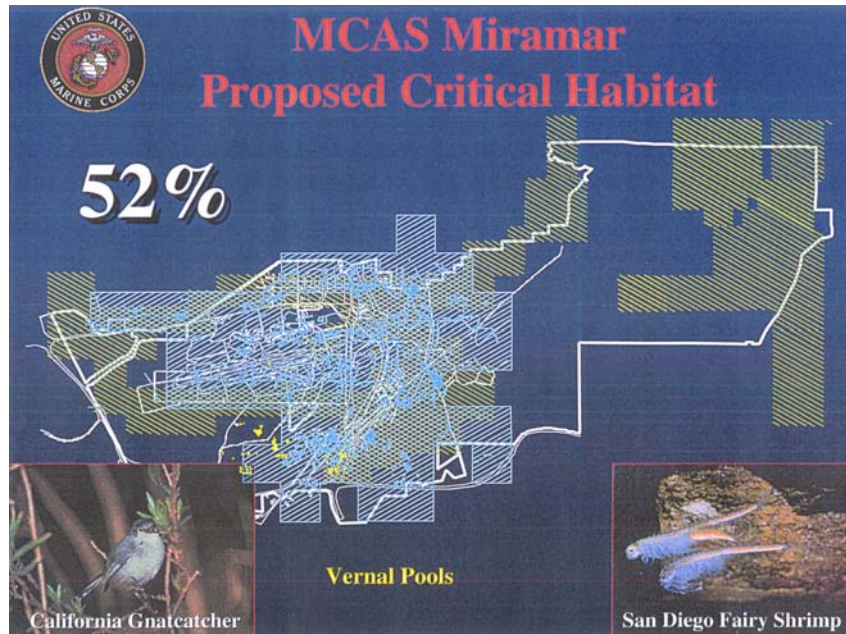
I point this out to you, sir, because 85 percent of the base is purposely not developed, because that is where we train.

Now, this graphic right here, the 57 percent shows what would have happened if the critical habitat of the fairy shrimp, the California gnat-catcher, and the arroyo toad had, in fact, taken place aboard Camp Pendleton over the last few months.

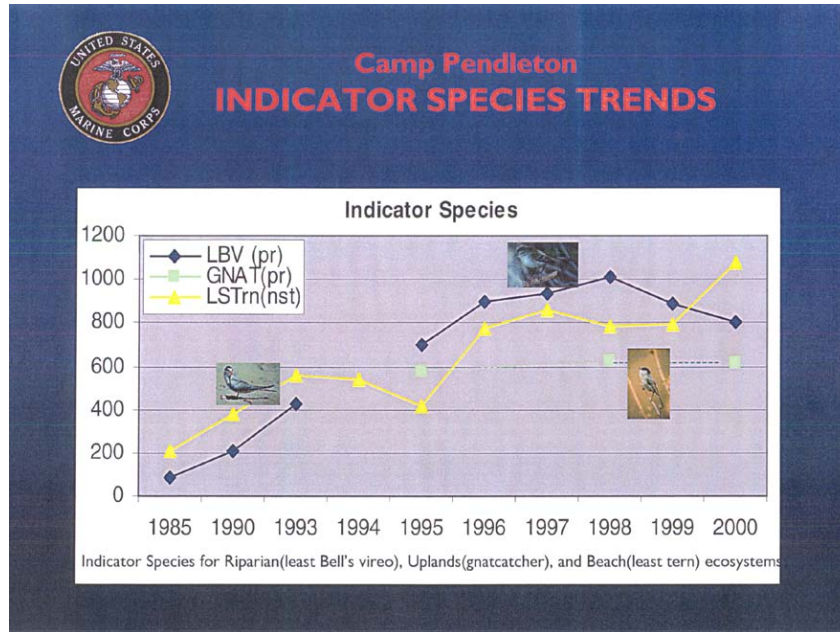
First of all, let me for the record say, sir, the Fish and Wildlife Service was able to get us an exclusion, but right now my understanding is we are being sued, and if, depending upon how that particular litigation goes, it may end up that we are not able to be excluded under the critical habitat, which would mean that 57 percent of our base would have critical habitat for some of these species.

The areas in white would be all that would be remaining for us in terms of having unencumbered training. The hash mark areas would be critical habitat, and that critical habitat would be areas in which we would have to consult and get permission to be able to go and train, and it would be time-consuming, and we would not be able to do the kinds of training that we would want to do.

Now, currently this number is at 10 percent, because of the exclusions, but the point I want to make here is, this is what can happen when critical habitat gets overlaid on the base like this, and the other thing I want to point out is that there are many other species coming down the pike. San Diego County has, I think, the highest percentage of endangered species in the United States, and all of southern California, because of development and because the environment, and the habitat of many of these creatures have been destroyed. A place like Camp Pendleton, of course, is looked at as a place to become a refuge, and we are concerned that in the future there will be even more species that will be identified by the service, that they will come looking to us for critical habitat.







Our whole point of this, Mr. Chairman, is that we understand that we are going to have to do our fair share to protect the species. We understand that, but we are hoping that through the use of our Integrated Natural Resources Management Plan that we want to get to under the Sikes Act, that we will be able to show that we have got a plan that we can go ahead and manage our property, take care of our species, at the same time do the unencumbered training of marines we feel we need to do.

So this graphic was the best way I could kind of show you on a base the size of Camp Pendleton, 125,000 acres, the impact of something like critical habitat.

Senator INHOFE. OK, but part of the question is, let us assume that you are not going to be able to get these waivers. How does that impact the quality of training? Is there a way to quantify that?

General HANLON. There is, sir. Well, I am sure there is a way that you could quantify it. I will give you an example of a conversation I had just before I came out here with the commanding officer of the 13th MEU just returned from the deployment to the Persian Gulf. They were there when the *Cole* was bombed and what-have-you.

A year ago in March they were in the final stages of their training to deploy. One of the evolutions that they were supposed to go through was an amphibious assault involving their light armored vehicles coming in a Landing Craft Air Cushioned (LCAC) to take an infantry unit ashore at night to move in and go ahead and seize an objective. Because of the time of year, because of the habitat and the breeding taking place along our beaches, beaches were unavailable for them to go ahead and make this amphibious landing.

What they had to do, sir, was, they had to make an administrative landing in the LCAC, take the air-cushioned vehicles into the concrete ramp, which is the base of the LCAC. They had to drive out, administratively drive up a road, go into the training areas until they got out of the beach, out of the critical habitat areas, and then go ahead and do the training.

My point to you on this, sir, was that unit commander did not have an opportunity to put his unit across the beach and go through the kinds of training that they would have to do to prepare themselves to go across a hostile beach, or some beach somewhere in the world that they would have to deploy. They did not do that, and so I think what that does is, that is a degradation of training. He was not able to train his unit to do that particular evolution the way he should have, and there are many more like that, sir. That is just one example.

Senator INHOFE. General Van Antwerp.

General VAN ANTWERP. Sir, I would say that briefly it does introduce artificial issues into the training. I will just give you—for the red-cockaded woodpecker at Fort Bragg, first of all you cannot drive a vehicle within 50 feet of a cavity tree, a tree that is marked as you have said. You have seen how they mark for the red-cockaded woodpecker.

Also, you cannot establish a fixed position within 200 feet of that same cavity. You cannot do multiple rocket-launch firings or other firings within that buffer zone, and so what you have created is a lot of islands out there where these cavity trees are as you draw the concentric circles around them, and you have to manage that as you are doing your training, so it creates that you do not position your force exactly like you would like to. You have introduced this artificial constraint to it, and so I think that, does it impact the quality, absolutely it does.

Senator INHOFE. Senator Akaka, did you have anything further?

Senator AKAKA. Thank you, Mr. Chairman.

Again, I want to thank you for the agreement you mentioned in my last round. In Hawaii, we have an issue with military training in an area called Makua Valley, and that is a valley that is rich in cultural heritage. The Army has been using that for many years, and the Army voluntarily suspended training on the range after a fire in 1998 that burned the valley, and is now working to address a wide range of community concerns with a 14-point plan, and it is a great plan that they are working on with the community.

Now, Major General James Dubik, the commanding general for the 25th Infantry Division, and his staff, have done a lot of work with the community in an effort to resolve this issue. They are still working on it. They are working with the community very closely, and we hope that they can come to some agreement soon, but this reveals exactly what you are committing to, or agreeing to here, working with the community and their concerns, and in this case consulting with them because of the rich cultural heritage of that valley. We hope that the agreement can come about soon.

I would like to switch to something that is environmental, and this may be my last question, Mr. Chairman. I understand that the Department of Defense makes it a practice to request funding only for those environmental compliance areas that are already out of

compliance and subject to an enforcement action, and those that will be out of compliance before the next budget cycle.

Now, the question is, what impact would it have on your ability to address the environmental issues that you have raised today if the administration or Congress would have substantially reduced the amount of money available for environmental compliance? Admiral.

Admiral AMERAULT. Yes, sir. It would have a severe impact, because you have correctly stated, because of—I was the Navy budget officer at one time, so this is a near and dear question to my heart. We have fiscal difficulties as it is with our operation and maintenance budgets for training and readiness.

We only make priorities such as the first priority being something that is out of compliance, the next priority being something that is about to go out of compliance and so forth, because of the constraints on environmental budget now, so that if we had further constraints on it, it would certainly be something that would preclude the kinds of things we would like to do to be good stewards of the environment on our ranges and bases, and it would upset any or many of the outreach programs we would like to entertain, as you have mentioned, so we would like to see the environmental budget stay at least what it is, I think.

General VAN ANTWERP. Sir, I would say you are correct in that what we are able to fund up to this point is our must funds, which are those things which are already out of compliance, or those things that we feel will be out of compliance during that budget year, that there is not more room for the preventive things that I think we all want to do to get out ahead of it, and that would take an increase in funding in this area, and we just do not have the top line room to do that.

Sir, I might mention on Makua Valley that we did have a formal consultation with the Fish and Wildlife Service. It looks like there will be agreement probably made pretty soon. We are working on the final aspects to develop a fire control plan, if you will, and it looks like possibly we will have to limit the size of the unit's exercising there to company size, but I think that there should be an agreement in the offing pretty soon.

Senator AKAKA. Well, I thank you very much for your responses.

Mr. Chairman, I do have other questions, but I will submit them for the record.

Senator INHOFE. Yes. We will leave the record open for 3 days for questions. There are some things we have not talked about. One is the BRAC process, as we alluded to it very briefly, but things like this do not happen in a vacuum.

As you go through that process, I am sure that encroachment is going to become a very significant part of base closure. I mean, some things are obvious, Vieques, obviously. If we were unable to use that for training as a live range, it would ultimately result in the closing of Roosevelt Roads, Fort Buchanan, and some of the other operations.

I think, though, that for our purposes that we need to be looking—and when you are talking about excess infrastructure, I think we need to keep in mind that that excess infrastructure is not going to be in a vacuum, too. We have other areas where new regu-

lations, new species to be protected, new emissions controls are going to come in and it is going to dramatically affect what happens to our future infrastructure.

We have gone 10 minutes time past—we were supposed to close this down. Is there anything that any one of you is just dying to share with us? [Laughter.]

Admiral AMERAULT. I want to thank you for taking an interest in this arena, because if, in fact, communities do not want us to train the way we fight, it is very difficult for us sometimes to get through the courts and the other avenues that we have to maintain the ability, and we do not want to become a pariah on society. We want to have a recognition, we hope, for the contributions to the national defense and its proper relationship with the environment.

Senator INHOFE. That is a good point, and in my State of Oklahoma we have Fort Sill, where you compare, for example, Vieques and Fort Sill, the live ranges, we have always had ours open twice as many days of the year, more ordnance, bigger ordnance, and yet the people there, a population not of 9,400 like on Vieques, but of 100,000 people, closer to the range than the people in Vieques are, and yet they say it is the sound of freedom.

Admiral AMERAULT. Sir, war, major war is an extreme blight on the environment. If you look at pictures of the way the Civil War left Northern Virginia, very close to here, the way the First World War left France, you can still see the trenches in some place, and from the air, it permanently changed the landscape in France. World War II, Vietnam with the defoliation and so forth.

These are tremendous environmental disasters. We would like to think that the readiness that we represent is something that prevents, we hope, in the nature of what happened in the Cold War, war from occurring, so potentially—it may be a stretch, but perhaps this is an investment in preventing something like that.

Senator INHOFE. I do not think it is a stretch at all, if you get into war-torn areas and see what has happened to the environment. Any of the rest of you?

General BUCHANAN. Sir, if I may, I would like to kind of tee off of your comment on the SU-35, 37 versus the F-15. Today I have the good fortune and great privilege as a part of coming here to have been the commander of Tyndall Air Force Base, which you probably know is where we train all of our new F-15C air superiority fighter pilots.

As such, I was blessed with a very, very supportive community, and despite the fact that I, too, had my challenges with the environment and the surrounding areas, we found work-around, so I can honestly say there was almost no impact on the training we had, but I was blessed with a supersonic training area, as I mentioned, within just miles of the coast, where our pilots were able to train like they were going to fight.

They were putting high G's on the jet. They were able to use chaff and flares, and at the same time, too, they were able to fly down low over land in our overland training area as well, and as we move into the future we find our men and women that go into combat meeting technologies that are equal, in some cases superior because we have not been able to maintain the technological edge we would like to provide our young men and women.

It is my personal view that it is only the training that we provide them day-in and day-out that is going to make that difference in combat, because for years we have talked about the potential threat we have had out there. Well, they have had very capable systems, but what we have found quite honestly in the past has been that when we are able to open up the doors when we were able to kind of take a look at the way they were training to deploy those systems, no one knew how to deploy them better than the American fighting man and woman. Quite honestly, I think we have to maintain this edge, because that is what is making the difference today.

Senator INHOFE. Thank you very much. Any other comments?

General VAN ANTWERP. Sir, I would say for us it is all about maintaining the edge, and the more frequently you can do the things we need to do in our maneuver areas and our live-fire, that is what maintains the edge, and there is no substitute for it.

General HANLON. Mr. Chairman, thank you. As a sitting base commander dealing with these issues every day, I just want to say how much I really appreciate you and the other members of this committee taking time to hear us out. I was just talking about this with my staff last night, sir, saying in 3 years we have come a long way, that we are able to get it up to your level.

I think it is so important, because I am just concerned, sir, that if we do not get it to the attention of Congress, then we will continue to see court actions that will decide what we can do or cannot do on our base, and I do not think that was ever the intention, sir, of Congress, and I just thank you for taking the time to hear us out and to help us, because we certainly need it.

Senator INHOFE. This is the whole reason for having this. We appreciate so much your bringing it. Several times you have said, we need your help, and we have to tell you that we need your help, too, to come up with the solutions to these problems. We are already working on some, and it is something we are going to have to work harder on, and we will be depending upon all of you.

Thank you very much. This concludes our hearing.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JAMES M. INHOFE

RANGE ENCROACHMENT

1. Senator INHOFE. Major General Van Antwerp, Vice Admiral Amerault, Major General Buchanan, and Major General Hanlon, the Senior Readiness Oversight Council identified a series of encroachment issues that adversely impact military readiness: endangered species and critical habitats; unexploded ordnance and other constituents; maritime sustainability; airspace use; air quality; airborne noise; and urban growth. Based on the testimony provided by the services at the hearing on March 20, 2001, it appears that the time is ripe for the development and implementation of a comprehensive strategy that addresses both the individual and the cumulative effects of these issues.

What specific actions have the military services taken in relation to the development and implementation of a comprehensive strategy intended to address readiness concerns related to these encroachment issues?

What recommendations will the military services make regarding further actions in this area?

General VAN ANTWERP. The Army's comprehensive effort to ensure readiness and minimize impacts of encroachment is the Sustainable Range Management (SRM) initiative. The objective of SRM is to maximize the capability, availability, and accessibility of ranges and training land to support doctrinal training and testing re-

quirements. SRM is based on three tenets: (1) Develop and Maintain Scientifically Defensible Data. We must have complete data on all aspects of our ranges—their operational characteristics as training facilities, their physical characteristics as real property, and their characteristics as part of the natural and cultural environment; (2) Integrate Management across the four disciplines that directly affect ranges: range operations and modernization, facilities and installation management, explosives safety management, and environmental management; and (3) Establish an Outreach Campaign—to inform and address the concerns of the community so all may gain an understanding of why the Army must conduct training and testing, and how we are moving to a more sophisticated management approach to ensure that the public's concerns are addressed. The Army Deputy Chief of Staff for Operations and Plans (DCSOPs) leads this initiative and is working with my office and other Army organizations to develop and implement SRM. We anticipate that SRM will lead to a better understanding of our training and testing activities, both within and outside the military. SRM will promote a more informed dialogue when weighing national security and environmental requirements.

Part of environmental management, and therefore part of SRM, is the Army's natural resource management program. Currently, the Army plans for natural resource management through development of its Integrated Natural Resource Management Plans (INRMPs), pursuant to the Sikes Act. Army policy goes further than minimal statutory compliance, however, by requiring installations to prepare Endangered Species Management Plans (ESMPs) wherever listed or proposed species or designated critical habitat exist on an installation. Neither the Sikes Act nor the Endangered Species Act (ESA) requires ESMPs. These plans are developed in consultation with the U.S. Fish and Wildlife Service, as well as with state fish and game agencies. The Army is working with the U.S. Fish and Wildlife Service and state fish and game agencies to finish the first set of INRMPs and ESMPs. These plans form the basis for managing the natural resources that compose the Army's training ranges. We believe that this component of SRM will contribute significantly to lessen encroachment impacts.

The Army recommends that Congress support and resource implementation of the Army's SRM initiative. SRM is the foundation for assuring continued live training and environmental stewardship on our ranges. We will continue to improve range operations, range modernization, state-of-the-art land management, research regarding the effects of munitions constituents, UXO management, and public outreach.

We also recommend that Congress support and encourage cooperation among regulators and the military in ways that emphasize the need to harmonize military readiness and environmental concerns. The Army believes that Congress should continue to recognize that Army readiness is a positive societal good and a legal mandate. Defense of our Nation is an important requirement that benefits all citizens. I strongly believe there are effective ways to harmonize the needs of the military with the needs of the environment, and I firmly believe it is in our Nation's best interest to do so.

Admiral AMEREAULT. Navy has nearly completed its ongoing efforts to develop a comprehensive strategy that identifies our core ranges and operations areas, and defines the initiatives needed to sustain or expand our access to them. The strategy consists of a roadmap that links range requirements and capabilities to readiness; determines readiness impacts and alternatives when a range becomes unavailable; minimizes encroachment impacts via sustainable action plans; reaches out to neighboring communities; emphasizes opportunities for mitigation to reduce or avoid impacts; and formalizes a Training Range Organizational structure.

The Navy Training Range Roadmap outlines our strategy to train while protecting the environment to the maximum extent practicable. Navy needs congressional support to ensure that an appropriate balance is struck between military readiness requirements and environmental protection concerns when environmental laws and regulations are applied to military unique training activities and fleet operations.

General BUCHANAN. Under the auspices of the Defense Test and Training Steering Group (DTTSG), DOD has established a Sustainable Range Working Group. This group is chartered to work all areas of range sustainability. It is in the process of developing action plans on various encroachment areas, to include endangered species, unexploded ordnance, air quality regulations, maritime encroachment, noise, national airspace redesign, frequency encroachment, and urban growth. It also includes development of an outreach program. We also recognize the need for an outreach program that educates our national, regional, and community stakeholders while incorporating their inputs. Conducting these activities will lead to a greater recognition of DOD's mission and need for military ranges and an acceptance that communities and military installations can co-exist.

General HANLON. Through the Senior Readiness Oversight Council (SROC), the services are developing coordinated action plans to address various aspects of encroachment.

In concert with development of these action plans, the Marine Corps has a three-fold strategy to address encroachment:

Public outreach and engagement: It is in our best interests to reach outside the fence and actively engage regulatory agencies and our neighbors, educate them on our mission and operations in support of readiness, work to understand their concerns, and develop working relationships built on respect to limit or prevent encroachment pressures. The Marine Corps is engaging encroachment issues at all levels of government and with the public. For example, we have initiated constructive dialog with state governments such as California's Defense Retention and Conversion Council. Through this forum, the Marine Corps has been able to articulate ways to reduce encroachment while improving the viability of the installations, ranges, and training areas. Another example of our engagement efforts is our work with members of the Endangered Species Coalition, an umbrella organization consisting of environmental advocacy groups concerned about endangered species. Many of the coalition's members have sued the Marine Corps over environmental issues. However, they understand that for many ecosystems, military lands are the only undeveloped lands left. Though they don't always agree with our activities due to their endangered species concerns, they are impressed with our stewardship record. They are interested in forming a strategic alliance with us to help keep undeveloped lands in their natural state. Achieving this mutually beneficial goal will limit additional urbanization around our installations. It also builds support for our military land use and stewardship efforts, while reducing friction and litigation.

Legislative clarification and consideration: We are asking this Congress to reevaluate many laws governing environmental protection. The Marine Corps is not asking for a rollback of these laws. We have been innovative in meeting our compliance requirements, while addressing our readiness needs. We are doing much to protect the environment. We fully acknowledge our environmental responsibilities, however, we have a nonnegotiable contract with the American people to properly train their sons and daughters. We are increasingly being asked to shoulder a disproportionate share of environmental protection while still meeting our readiness commitment to the citizens of our country. The unique nature of military activities must be considered when developing or reauthorizing these laws. The Marine Corps' national security responsibilities under Title 10 must be acknowledged in development and implementation of regulations. This will also benefit the regulatory community by allowing them the flexibility to weigh the value of good stewardship offered through our land management practices in their enforcement of laws and regulations (Title 32).

Acquire real property interests: The Marine Corps needs to acquire additional land around some of our installations and ranges to protect them from additional urbanization pressures. This can be accomplished via real property acquisition or in partnership with other organizations or non-profit groups that will manage the land in a natural state for their "green space" goals while also serving for us as a buffer zone against urbanization.

UNEXPLODED ORDNANCE

2. Senator INHOFE. Major General Van Antwerp, Vice Admiral Amerault, Major General Buchanan, and Major General Hanlon, unexploded ordnance and other by-products of test and training activities can cause environmental contamination and safety concerns that may trigger restrictions on military testing and training. I am aware of the training restrictions in place at Massachusetts Military Reservation.

What other installations are vulnerable to such restrictions?

How feasible is it to relocate training installations in response to restrictions that may occur at major training facilities?

What is the current technology challenge in resolving this problem?

What research and development (R&D) priorities have been identified in this area?

General VAN ANTWERP. All Army installations, training areas, and range operations are vulnerable to imposition of environmentally-based restrictions on training activities. Because our units train with numerous and diverse weapons on thousands of ranges, the potential for unilateral administrative cease-fire orders exists Army wide. At the Massachusetts Military Reservation, EPA exercised very powerful, discretionary authority under the Safe Drinking Water Act and the Resource Conservation and Recovery Act. The use of environmental regulation to curtail

training activities must have a scientific basis. Unilateral orders to stop firing while we investigate these challenging issues will adversely impact readiness. A more balanced approach is warranted. Such an approach should ensure that national security concerns, as well as environmental stewardship interests, are weighed by policy makers whose interests and perspectives are broad.

Encroachment has diminished the amount of land available for training, while at the same time training requirements have increased. Relocation of training activities within a given installation to meet environmental compliance requirements has become increasingly difficult. Environmental restrictions exist throughout installations, and if a training operation is moved from one area of an installation to another, this normally triggers other environmental issues.

Relocating training from one major training installation to another is also very difficult—and costly. Physically moving personnel and equipment to another installation is expensive and displaces training activities at the alternate site. It also increases personnel tempo (PERSTEMPO) adding to the “deployed” time of Army personnel—a known morale and retention disincentive. Most major training installations are equipped with ranges designed and constructed specifically to meet the requirements of the forces assigned to that installation. Even in instances where another major training installation or a number of smaller facilities are located within a few hundred miles, it is unlikely that these alternate sites are equipped with appropriate ranges or could accommodate the additional training load in their already tight schedules. The dramatic increase in training load would trigger requirements under the National Environmental Policy Act to assess environmental impacts to the alternative training site. This process would increase lag time, further restrict training, and potentially result in litigation against the Army.

I would also like to address a serious challenge concerning recent regulatory actions on ranges—explosives safety decision-making. The Army is very concerned that environmental regulators, who lack both training and experience in explosives safety and munitions response, are using environmental laws to take actions that our explosives safety experts believe are unsafe to themselves and/or the public. DOD’s authority and responsibility for explosives safety decision-making should be reaffirmed.

Given the potential consequences of an explosives incident, the Army believes that explosives safety considerations must be fully integrated into the decision process for response actions involving military munitions, to include UXO, munitions constituents, and other constituents of concern. We also believe that DOD personnel, particularly those responsible for handling response actions involving explosives safety hazards, are the best qualified to make decisions about the safety of a proposed response action. We must ensure that any action involving military munitions first be safe from an explosives safety hazard standpoint. As such, the Army cannot implement any response action that, in the judgment of DOD’s explosives safety experts, presents an unreasonable risk of death or serious injury to anyone, including DOD and regulatory personnel. Therefore, we strongly believe that explosives safety should be paramount in the determination of how environmental statutes and regulations will be applied and implemented for response actions involving munitions.

As for the scientific community, technical understanding regarding the linkage between range training activities and environmental risk remains the single most important challenge. As a result, the Army’s scientific community is focused on gaining the requisite data and information to make sound, valid determinations of the risk from environmental hazards associated with training.

In terms of prioritization, the Army derives environmental quality technology requirements from an iterative, bottom-up formulated, and top-down driven process called the Army Environmental Requirements and Technology Assessments process. This robust and vigorous prioritization process captured early the need for research in this area. As a result, the following three funded programs of particular note are ongoing: Unexploded Ordnance (UXO) Identification and Discrimination, Hazardous/Risk Assessment Tools for Military Unique Compounds, and Sustainable Army Live-Fire Range Design and Maintenance. As the names imply, these programs attack the problem from three directions—risk assessment of military unique compounds, identification of UXO, and the sustainability of training ranges.

Admiral AMERAULT. All of our test and training ranges and installations are subject to statutory and regulatory requirements that have the potential to inhibit our ability to conduct realistic test, evaluation and training activities. We are currently developing a protocol that will be applied uniformly across all Navy ranges to: (1) evaluate the current environmental health of those facilities; (2) ensure range operations do not pose an imminent and substantial endangerment to human health or the environment; and (3) identify how existing legal requirements could potentially affect their use.

We are engaged in a detailed analysis of the potential for using alternative sites if use of our major training facilities is restricted in the future. From our experience in seeking alternatives to compensate for restrictions on our use of Vieques, we already know that finding sites that adequately meet our mission readiness requirements is extremely difficult. Many alternative sites can provide some, but not all, of the training required. Others are just not able to support the train-as-we-fight reality that our major ranges are capable of due to their location, geography, lack of instrumentation, distance from the sea, or other limitations. Some of our existing ranges would be hard pressed to absorb additional training activities relocated from Vieques.

Overseas ranges do not necessarily provide a viable alternative if U.S. ranges are restricted. For example, the Pacific Fleet has only one U.S.-controlled range for live-fire training of forward deployed Naval forces, and no agreements that would guarantee us access to any foreign-controlled range. At this time, Pacific Fleet's ability to conduct readiness essential training on this range is subject to an ongoing lawsuit seeking to enjoin its use based on the Migratory Bird Treaty Act. This lawsuit, filed despite our full compliance with the National Environmental Policy Act and the Endangered Species Act, including consultations with the U.S. Fish and Wildlife Service, is a serious threat to the fleet's combat readiness.

We face a variety of complex scientific and technological challenges in managing sites that potentially contain munitions or unexploded ordnance. Existing technology is unreliable. For example, field experience indicates that a high percentage (i.e. as much as 99 percent) of the objects found in the course of a UXO response are non-hazardous metal items. As a result, a significant portion of the cost of a UXO response stems from excavating these non-hazardous items. To address this challenge, DOD has invested in improving our understanding of the underlying geophysics and at advancing the capabilities of specific systems used in conducting UXO responses.

The two principal R&D programs with investments in this area are the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP). These DOD-sponsored programs work with the services, various regulatory agencies, industry representatives, leading universities, government and corporate research laboratories, and other stakeholders to determine specific areas for further investigation that appear to promise a high return-on-investment (ROI). SERDP and ESTCP are currently funding efforts to address the following:

- Improving the science underlying UXO response technologies (e.g. geophysics),
- Developing more effective and efficient technologies for conducting UXO responses,
- Significantly increasing the probability of UXO detection, and,
- Increasing applicability of these systems to a diverse set of geographic applications.

General BUCHANAN. All Air Force ranges comply with applicable Federal and state environmental regulations, thus limiting our vulnerability.

Relocation of Air Force test or training activities from one major training facility to another would be difficult. Each of our major ranges has unique capabilities not found on other ranges. There is little redundancy. For example, at Barry M. Goldwater Rang in Arizona, the combination of weather and target layout make it the ideal training range for F-16 and A-10 pilots. The Nevada Test and Training Range has instrumentation that allows us to evaluate advanced tactics and perform realistic large-force exercises. At Edwards, we have a large block of airspace that is heavily-instrumented for flight testing. Eglin AFB is also heavily instrumented for weapons testing, as is the Utah Test and Training Range. It would be a challenge to try to overlay the mission of any one of these ranges on another range.

The Department of Defense (DOD) faces a number of complex scientific and technological challenges in dealing with sites potentially containing munitions or unexploded ordnance (UXO) like the Massachusetts Military Reservation. For example, field experience indicates that a high percentage (i.e., as much as 99 percent) of the objects found in the course of a UXO response activity are non-hazardous metal items. Excavating these non-hazardous items contributes to a significant portion of the cost of UXO responses. To address this specific challenge, the DOD makes focused investments aimed at improving our understanding of the underlying science of UXO response technologies (e.g., geophysics) and advancing the capabilities of specific systems used in conducting UXO responses. Overall, DOD's UXO technology goals and developmental objectives seek an increase in the probability

of detection, while significantly reducing the false alarm rate for conducting UXO responses.

The Air Force in cooperation with Department of Defense and the other military services have identified high priority technology and requirements to detect, characterize, and remove unexploded ordnance (UXO), and to conduct fate, transport and effects studies. Other requirements include UXO-related human health and ecological risk assessments. Addressing these requirements will allow the military services to assess the impacts of UXO and other chemical residuals, and support development of appropriate cleanup technologies. These high priority requirements will also support the establishment of science-based regulatory standards.

General HANLON. At the Massachusetts Military Reservation (MMR), the Environmental Protection Agency used their authorities under the Safe Drinking Water Act to restrict operations at the base. The MMR is located in the recharge area for a sole source groundwater aquifer that serves upper Cape Cod. Although none of our installations are located over such a sole source aquifer, this does not mean that Marine Corps installations are not vulnerable to restrictions similar to those imposed at MMR. Many of our installations use on-base groundwater or surface water as their source of drinking water and are therefore regulated under the Safe Drinking Water Act. In addition, our installations are vulnerable to training restrictions due to other environmental statutes (e.g., the Endangered Species Act, Resource Conservation and Recovery Act, Clean Air Act) and the numerous forms of urban encroachment (e.g., noise, airspace, frequency spectrum).

The Marine Corps is not directly involved in the development of technologies for clearance or remediation of UXO. Although this research and development is accomplished by the other military services, the Marine Corps actively participates on the boards that functionally review these technologies. The Marine Corps is working with the other services to develop a process to evaluate environmental impacts at our active ranges. This evaluation will be used to identify scientific information gaps and our UXO technology needs to the research and development community.

The Marine Corps is confronted with modifications to training on a daily basis due to a variety of restrictions placed on the utilization of training ranges. These modifications range from simple solutions, where local commanders adjust training due to restrictions emplaced to protect endangered species, to restrictions which have the potential to impact service-wide capabilities, such as restricting large scale, live-fire and maneuver exercises due to environmental and populace encroachment issues. Thus, a single, simple answer to the question is difficult to frame, and is wholly determined by the scale and impact on training overall. In those instances where local commanders can adjust training and still accomplish the training objectives, relocating training activities is easily accomplished. In those instances where major restrictions are placed on live-fire and maneuver, the relocation or adjustment of training could have a service-wide impact approximating the impact of a BRAC base closure.

In all cases, while certain restrictions may reduce or eliminate the ability to train to full potential, the requirement to train never goes away. The Nation requires a corps of Marines ready to respond to any contingency at a moment's notice. This readiness is squarely based on the ability of our operating forces to train across the full spectrum of their capabilities.

MARITIME OPERATIONS, TEST, AND TRAINING ACTIVITIES

3. Senator INHOFE. Vice Admiral Amerault, maritime resource protection laws, executive orders, and interpretations of Federal and state regulations have affected the conduct of maritime operations, test, and training activities.

How have fleet operations and training exercises been specifically impacted?

What is the Navy doing to protect its readiness capability in relation to this issue?

What are the problems with the statutory/regulatory framework?

What is the Navy's research investment in this area and what has the research revealed?

Admiral AMERAULT. Our ability to operate and train has been affected by many factors. In order to ensure full compliance with existing laws and regulations, we have reduced our number of training days, reduced our training realism and effectiveness by employing mitigating operational parameters (altitudes, airspeeds, profiles), and accepted temporary reductions in range access in order to protect natural resources.

In addition to these impacts, we have experienced concomitant administrative and manpower costs resulting from decreased scheduling flexibility (to accommodate long lead times required to ensure legal compliance), increased flight hour costs, in-

creased travel expenses and most importantly, increased time away from home for sailors during the 18 month training cycle leading up to their 6 month overseas deployment.

(a) Reduction in the number of available training days

- Vieques—Navy has access to the range at Vieques under existing Presidential Directives 90 days per year. Navy currently has plans to train at Vieques for 55 days in 2001. In 1998, Navy trained at Vieques 197 days.
- San Clemente Island (SCI) During the breeding season for the San Clemente Loggerhead Shrike (February to August), the Shore Bombardment Area (SHOBA) range is open to Fleet training ONLY 3 days a week, because the other 4 days a week the range is shutdown to allow biologists opportunity to examine the Shrike. Moreover, the range is closed to training whenever biologists are authorized access to the SHOBA range. In fiscal year 2000 Biologists were in the field in SHOBA portions of 322 days.

(b) Decline in training realism as tactics are modified to comply with environmental laws.

- Workarounds used by both the Atlantic and Pacific Fleets in conducting training exercises include use of non-explosive ordnance, limiting some training to daylight hours, and limiting use of illumination rounds during night bombing and gunfire training.
- On San Clemente Island nesting Shrikes are vulnerable during the fire season, which runs from May to Jan/Feb (9 to 10 months/year). To protect the Shrike from the fire hazard, we shrink the size of the two live-fire impact areas to provide a buffer zone between Shrike nests and potential fire hazards. Although small to begin with, one impact area is reduced 90 percent in size and the other 67 percent. This results in fewer available targets. We also eliminate use of illumination rounds and all Naval Gunfire Support training at night.

(c) Accept temporary or permanent loss of range access.

Restricted or temporary loss of access to a range and the subsequent requirement to seek alternatives or workarounds often results in increased training costs and reduced training realism and effectiveness.

- NAB Coronado Beaches—NAB Coronado has recently been designated critical habitat for the Western Snowy Plover and the California Least Tern. As a “work around” to support the recovery of these species, Navy physically marks nesting areas and reschedules training to other areas during nesting season, which runs from March to September.
- Navy conducts an active predator control program on its beaches to protect nesting birds. Adjacent non-DOD beaches, which are also within the critical habitat boundaries, do not have similar conservation programs in place. Our stewardship has led to increased population counts for both species on Navy beaches. Last year 40–50 percent of the beach area was lost to nesting. We anticipate the beach area occupied by nests to continue to increase each year for the foreseeable future.

(d) Decreased scheduling flexibility/increases in costs.

When Vieques has been unavailable for training deploying carrier battle groups, we have relied in part upon the range at Eglin Air Force Base, Florida, to accomplish required training. Use of the range at Eglin does not come without costs. There are additional time, manpower and fiscal costs to obtain the same level of readiness. Equally important is the fact that scheduling of Eglin ranges is beyond the control of Navy planners. As a result, Eglin’s availability for training may not coincide with the carrier battle group’s deployment training cycle.

As the DOD Executive Agent for maritime sustainability, Navy is basing its actions on a four-pillar strategy: sound legal position; knowledge superiority; consistent policy and procedures; and education and engagement. We and the other services have taken the position that we must operate from a sound legal position. We intend to be expert in the subject area so that well-informed decisions are made during the planning for training, testing and operations. Key to our strategy is the implementation of policies and procedures that ensure consistency in environmental documentation and supporting technical methodologies. Finally, our strategy is designed to promote engagement with the public and regulatory agencies to make them aware of our environmental stewardship efforts, and to help them understand the nature and importance of DOD’s National Security mission.

Successful execution of our 4-pillar strategy mandates that we engage continuously with regulatory agencies and Congress to clarify the intent of current laws and regulations, and to ensure that future laws balance our national security mis-

sion with our environmental stewardship requirements. Consequently we have established working partnerships with other Federal agencies, and have engaged with them to address common challenges. For example, our partnerships with NOAA Fisheries, U.S. Fish and Wildlife Service, and the Marine Mammal Commission have resulted in a joint legislative proposal to amend the Marine Mammal Protection Act by clarifying the definition of “harassment.”

The reach of existing environmental laws and regulations is very broad, extending beyond U.S. waters onto the high seas. Some of these laws and regulations lack clarity. The definition of harassment in the Marine Mammal Protection Act is one such example, as noted above. Other laws, like the Endangered Species Act, place protection of Endangered Species above the primary mission of Federal agencies. Our commanders of course strive to reconcile their obligations under existing environmental laws and the Navy’s responsibility under Title 10 to maintain ready forces. In some cases, to comply with these laws, we must adjust the training designed to prepare our carrier battle groups for deployment. These adjustments take the form of environmental mitigation. Adoption of mitigation increases the probability of obtaining the necessary authorization from the appropriate regulatory agency, and decreases the risk of having to defend against a citizen suit (and its inevitable delays) designed to enjoin military training. Such adjustments to our planned training sometimes impact its realism and intensity, thereby contributing to a reduction in its utility.

The Navy’s marine mammal program is the only one in the world focusing on marine mammals and underwater sound. The goal of the program is to provide the data required to assess the potential effect of an at-sea-activity on living marine resources. It is a closely coordinated program of Research and Development funding to universities, industry, and national defense labs. Preliminary research began in 1988, and the program was expanded in 1994 and 2000. The program is divided into four research categories:

- Hearing and non-hearing physiological effects,
- Enabling technologies for impact assessment and mitigation,
- Ecosystem Studies, including controlled sound exposure to assess behavioral responses,
- Modeling and simulation.

This research indicates that it is possible to determine the temporary threshold shift in the hearing of some species of marine mammals.

Navy has several programs underway to assist in developing a predictive model for animal distribution and behavior. The development of bottom-mounted listening devices has provided the tools to derive estimates of fin whale numbers based on recorded whale calls. The movement of right whales and other species are monitored by development of radio telemetry tags attached to the animals. These tags measure sea surface temperature that helps to determine habitat preferences. New sensors use ARGOS I satellite tracking tags to follow the migration movement of humpback whales. Another new sensor—acoustic Datalogger tag—enables the Navy to record acoustic, behavioral, and depth data from a single tag.

The Navy is developing a marine mammal information system for the planning of exercises and training. The Living Marine Resources Information System (LMRIS) has five main elements: (1) monthly occurrence levels that provides information on the distribution and timing of living marine resources in large ocean regions; (2) population estimates of the species of concern including individual stock numbers; (3) sanctuaries, reserves, and critical habitats for all the geographic areas within which the Navy operates; (4) data that indicates the criteria used to determine the occurrence indices for each species and region; and, (5) a browser-based information and mapping system served through a web-accessible LMRIS server that provides immediate access to authorized users over the internet. The LMRIS provides access to consolidated information on what is known about living marine resources distribution and abundance over large ocean regions. Such information is critical for continued Navy operations while protecting and conserving our living marine resources.

Future directions include: (1) the development of predictive modeling of risk for Navy activity planners; (2) continued research to identify the data sets and models required to calculate the effect of a given sound source on marine mammals in a specific area; and, (3) developing simulation architecture to integrate the component data sets and models mentioned above.

SPECIAL USE AIRSPACE

4. Senator INHOFE. Major General Hanlon, commercial air traffic is expected to increase 6 percent annually and military airspace use will also increase with the next generation of high performance weapon systems. The Marine Corps has been attempting to obtain additional special use airspace in Pamlico Sound, North Carolina, for more than 12 years. A recent modification to the Marine Corps' original proposal includes raising the floor of the Military Operating Areas from 500 to 3000 Above Ground Level to lessen noise impacts.

How might the recent modification to the Marine Corps' airspace proposal impact training?

Why is it taking so long to obtain this critical airspace?

General HANLON. Raising the floor of the proposed special use airspace (Core and Mattamuskeet MOAs) from 500 feet to 3,000 feet, Above Ground Level (AGL), lessens the realism of training for Marine Corps TACAIR assets. It will restrict aircrew from using the airspace for low altitude air to ground, air to air, and basic low altitude maneuvering training. Aircraft participating in large scale and joint force exercises will be restricted to the mid and higher altitude blocks limiting the full potential benefits of the exercise and training.

The previous proposal (with a 500 ft. floor) was shelved/delayed for fear of litigation from local opposition groups. The Marine Corps has offered to raise the floor of the training airspace in an effort to speed up the approval process and limit exposure to litigation. In addition to raising the floor of the training area, the Marine Corps is currently preparing an Environmental Impact Statement (EIS) vice an Environmental Assessment (EA) to further limit susceptibility to litigation.

The Marine Corps' ability to acquire this additional special use airspace has been delayed as ongoing negotiations between the Marine Corps, FAA, and local opposition groups have failed to reach an amiable solution. Increased population in the area, combined with the increasingly restrictive environmental trends, and competing demands for additional airspace have forced the Marine Corps to compromise, in an effort to reach an amiable solution. Ultimately the FAA approves the allocation of Marine Corps special use airspace.

AIRSPACE ACQUISITION AND USE

5. Senator INHOFE. Major General Van Antwerp, Vice Admiral Amerault, Major General Buchanan, and Major General Hanlon, what other specific challenges do the Services face regarding airspace acquisition and use?

As currently proposed, how might the Federal Aviation Agency's "Free Flight" program effect military operations?

What are the Services doing to address these challenges and to provide adequate airspace volume for current and future military testing and training needs?

General VAN ANTWERP. The Army recognizes that airspace is a critical element required to support training, testing, demolition, and other essential operations and activities. Those activities include firing indirect weapons such as artillery, air defense, Unmanned Aerial Vehicles (Remotely Operated Aircraft), Army and joint aerial gunnery missile intercept programs, such as Theater High Altitude Air Defense. For example, Special Use Airspace (restricted areas) is required to contain activities that would otherwise be harmful to non-participants. Airspace is also required to support installation airfields and other aviation training areas, e.g., Nap-of-the-Earth and Night Vision Device. Complaints concerning noise generated from aircraft and ground-based sources are also a concern and can impact on airspace availability. The Free Flight concept, if not implemented carefully and wisely, has the potential to have significant adverse impact on the Army. Free Flight implementation must include adequate provisions to accommodate the needs of national defense. To ensure that the Army has access to sufficient airspace to meet its needs and accommodate combined and joint training, we are engaged with the other Services, OSD, the Joint Staff, FAA, and other agencies on a frequent basis to address these issues. We implement our engagement strategy through formal, chartered committees, boards and working groups, interagency representatives, and less formal daily coordination.

Admiral AMERAULT. The military recognizes that new, more sophisticated weapons and platforms require larger areas of Special Use Airspace for testing and training. The new testing and training activities, however, may be of shorter duration than similar current activities. We will continue to work closely with the FAA and have received a commitment from the FAA's Airspace Manager to include DOD in all discussions that deal with Special Use Airspace.

DOD and the services will continue to work closely with the FAA in the establishment of the Free Flight Program to ensure it does not affect our mission readiness. The FAA understands that the airspace overlying our major test and training ranges must remain. Some of these areas, the R-2508 Complex, Nellis, Fallon, White Sands and Utah Test and Training Range, to name a few, are critical to maintaining our mission readiness. We cannot afford to compromise this airspace.

FAA and DOD have agreed that additional discussion regarding other pieces of airspace to accommodate the Free Flight initiative may be necessary. We will thoroughly review each proposal to ensure that our testing and training requirements are not compromised.

General BUCHANAN. Despite a decrease in military force structure and total flying hours, the Air Force has a continuing requirement for airspace to train in. The Air Force is working closely with the FAA in the establishment of the Free Flight program to ensure it does not affect our ability to train. The FAA understands that the airspace overlying our major ranges with the costly ground infrastructure must remain. Some of these areas, such as the R-2508 Complex near Edwards AFB, CA, the Nevada Test and Training Range, and the Utah Test and Training Range, are critical to the accomplishment of our mission. These groups of airspace must not be compromised.

Both the FAA and DOD accept that there may be a need to negotiate on other pieces of airspace to accommodate the Free Flight initiative. But, we will thoroughly review each proposal. The key to the successful establishment, modification and use of Special Use Airspace (SUA) will require the application of the four following Parameters:

- Volume—enough to accomplish operational, test or training objectives
- Proximity—distance to operating airfields
- Time—available when operations, test, or training required
- Attributes—ability to accomplish specific air/land/sea events

The first three are self-explanatory. The term “attributes” refers to the quality that differentiates one piece of airspace from another. For instance, there might be a range under the airspace, or mountainous terrain needed for a particular test or instrumentation needed for training.

The key to maintaining our access to special use airspace is to work closely with the FAA. The senior members of the DOD Policy Board on Federal Aviation, along with the Department of Transportation/FAA, are currently determining a plan for effective joint FAA-DOD interaction. We will have to be able to predict and articulate our requirements. In order to move toward more real-time use, we will have to work with the FAA to focus on the technology necessary to make real-time work. Finally, we will have to take advantage of the natural flexibility of air operations to work creative solutions to difficult issues.

General HANLON. The biggest challenge the Marine Corps faces in the procurement and use of military airspace is encroachment. Civilian development, civilian aviation traffic, and environmental protection groups have encroached upon some training areas to the point that it limits our ability to train. Encroachment has significantly reduced the number of live-fire training ranges (particularly on the east coast, Hawaii, and Japan). Additionally, the usable range space of existing live-fire ranges have been reduced as a safety precaution due to encroachment to range boundaries, impact areas and firing fans. The ever intensifying and increasingly restrictive National Environmental Protection Act (NEPA) standards set forth by the EPA and other federal agencies further limits our use of training ranges and airspace. The combined result of these factors is a reduction in usable range space which detracts from training realism and negatively impacts aircrew readiness.

As proposed the free flight program will negatively affect military training operations and readiness. DOD must work together to build the proper infrastructure to manage airspace in coordination with the FAA. A good example of this is currently underway at Yuma, Twenty Nine Palms, and El Centro with the planned acquisition of ATC radars to manage the special use airspace in the vicinity of those bases. The radars, however, will not be operational until at least 2004.

The Marine Corps recently assigned the Training and Education Command (TECOM) as the executive agent for all ranges and training areas. This assignment enables better coordination of all ranges and training area requirements with that of emerging combat and training requirements by placing both responsibilities under a common commander, the Marine Corps Combat Development Command (MCCDC), located at Marine Corps Base Quantico, Virginia. Additionally, a Joint Sustainable Range Working Group Initial Action Plan National Airspace Redesign, the Air Installation Compatible Use Zone (AICUZ), and the Range Air Installation

Compatible Use Zone (RAICUZ) programs were established to aid in the management of airspace.

QUESTIONS SUBMITTED BY SENATOR WAYNE ALLARD

EASEMENTS TO PROTECT RF FREQUENCY AND COMMUNICATIONS

6. Senator ALLARD. Major General Buchanan, Schriever Air Force Base in Colorado is trying to secure easements to protect RF frequency and communications with satellites. The easements include height restrictions for the line of sight for satellite dishes. They are taking a pro-active approach to range encroachment. How are you supporting these efforts in the formulation of your budget?

General BUCHANAN. The United States Air Force is aware of the need to protect RF frequencies for command, control and communication links with satellites. The 50th Space Wing at Schriever Air Force Base is currently assessing the adequacy of local easements, to include height restrictions, and other limitations on range encroachments near its facilities. The purpose of the assessment is to identify potential problems that may impact either the surrounding community or satellite command and control operations. If the assessment identifies deficiencies, the 50th Space Wing and Air Force Space Command would develop action plans to meet its communications requirements while still accommodating local community concerns. Funding to address any deficiencies would be requested through the normal planning, programming, and budgeting process.

Satellite operations depend upon preserving the critical RF communications access we have today. It is important we continue to work closely with the Federal Communication Commission as well as local communities, such as Schriever Air Force Base, to create viable solutions that satisfy each other's needs.

AIR FORCE ACADEMY FLIGHT TRAINING PROGRAM

7. Senator ALLARD. Major General Buchanan, due to close in and more dense building around the Air Force Academy they are struggling with getting their flight training program restarted. Citizens complain about the noise and safety of planes flying over their homes during takeoff and landing. What is the Air Force doing and what can we do to help the Academy as well as the local citizens?

General BUCHANAN. The Academy is aware of community concerns regarding the Introductory Flight Training (IFT) program, an Air Force-wide program to better prepare pilot candidates for success at Undergraduate Pilot Training. In December 2000, the Academy developed, and made available to the public, an Environmental Assessment (EA) which analyzed the potential environmental impacts of the proposed IFT program. In an effort to accommodate community concerns, the Academy Superintendent, Lieutenant General Dallager, directed an additional review of the proposed IFT program alternatives. The purpose of the review is to identify potential program modifications that might mitigate community concerns and also meet IFT program requirements. The Academy is working hard to address these issues.

Your offer to help the Academy and community in this effort is greatly appreciated. Keeping the channels of communication open between the community, the Colorado delegation and the Academy will assist in finding an acceptable solution.

FLIGHT RESTRICTIONS AND ENCROACHMENT

8. Senator ALLARD. Major General Buchanan, flight restrictions due to the encroachment in the safety zone and noise make it difficult for the F-16 crews to train at Buckley Air Force Base. What can we do to help the units at Buckley Air Force Base as well as the local citizens?

General BUCHANAN. Brigadier General Schultz, the 140th Wing Commander, and Col. Mooney, 140th Wing Operations Group Commander, met with FAA officials, the Denver Manager of Aviation, and the Denver Terminal Radar Approach Control Air Traffic Manager to discuss Denver International Airport/Buckley air traffic issues. A detailed look at the proposed sixth runway operations and analysis of impacts of associated arrivals and departures on Buckley air traffic patterns was conducted. The consensus of the group was that no significant impact would occur to Buckley flight operations as a result of the proposed sixth runway.

Modifications to Buckley flight operations warranted changes to the Buckley Accident Potential Zone (APZ). The APZ boundary modifications resulted in the inclusion of "incompatible land uses" within the APZ; however, these land uses have not impacted flying operations at Buckley. To prevent future incompatible development

near Buckley, the City of Aurora has taken proactive measures adopting zoning codes, development regulations, and real estate disclosures of Buckley flying operations and noise. They continue to implement the Air Force's revised Air Installation Compatible Use Zone (AICUZ) recommendations to the extent practicable and legally sustainable.

As with all forms of encroachment, it requires continuous vigilance by the Air Force (including the Air National Guard) to ensure that Buckley's interests are factored into all decision making.

FORT CARSON ENCROACHMENT ISSUES

9. Senator ALLARD. Major General Van Antwerp, due to a housing build-up around Fort Carson, noise complaints are on the rise, especially from night training and artillery/aircraft firing. What can we do to help Fort Carson as well as the local citizens? Do local real estate agents inform their clients about living next to a military base? What do garrison or installation commanders do (or should do) to advise the surrounding communities as to the training schedules and the impact on the local community?

General VAN ANTWERP. The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), assisted in the completion of the Fort Carson Installation Environmental Noise Management Plan (IENMP) in December 1999. It contains detailed information regarding what land uses are compatible with the noise levels outside the installation boundaries. This IENMP was distributed to all regional land use planners in adjacent counties. It provides them with a reference document to aid in making decisions when evaluating applications for a change in zoning classification. Additionally, USACHPPM has provided instruction on the Fort Carson IENMP for regional, county, and municipal land use planners and interested private citizens to assist them in understanding the issues.

The Fort Carson noise contours were shared with regional land use planners to illustrate the noise levels on, and adjacent to, the installation. With this knowledge, land use planners can make appropriate decisions relative to zoning classifications.

Along the eastern boundary, there are several noise-impacted developments. The El Rancho and Midway Ranches are in an area that is noise impacted. When the proposed Digital Multi Purpose Range Complex is completed in 2006, noise impacts to these developments may well worsen. Fort Carson is working with the community to identify potential actions to address this concern.

In another case, a developer recently applied to rezone 640 acres in Pueblo County to allow development of 5-acre lots. The Pueblo County Department of Planning and Development required the developer to contact Fort Carson to determine if the land was noise impacted and to determine if it was a compatible land use. The answer was that it was a compatible land use. This coordination indicates that efforts to educate regional land use planners are being successful.

Zoning as a means of controlling encroachment is only partially effective. Midway Ranches, on the east, consists of three 5-acre lots. With this lot size, an agricultural zone classification will allow the development. The El Rancho development consists of approximately 500 5-acre lots. The land was platted in the early 1970s. Building on the El Rancho lots was very limited until 1998 due to the lack of water. Residents had to haul water and store it in cisterns at their residence. In 1998, the developer at Midway Ranches purchased water rights and installed water lines into the El Rancho development. The development currently has sufficient rights to supply 20 percent of the lots.

Housing starts in El Rancho have increased significantly since water became available. The developer at Midway Ranches is currently attempting to acquire additional water rights. When the Pinons at Turkey Creek Development, west of Fort Carson, were planned, comments from Fort Carson were incorporated. In the title for each lot there is a disclaimer stating that the lot is located next to Fort Carson and is subject to training noise and dust that can occur at any time of day or night.

At Fort Carson and most Army installations, some real estate agents apparently do not notify potential buyers of the adjacent installation and its associated noise. This lack of knowledge by the homeowner often results in complaints to the installation. Many noise complaints at Fort Carson occur when deployed units return to Fort Carson and resume their normal training activities. This creates so-called "quiet periods," followed by increased training by returning units. This increase in training noise often generates an increased number of complaints.

Installations do actively work to address noise encroachment issues by providing training schedules to the neighboring communities, working with local developers, responding to complaints, and publishing news releases.

An approach tried by the Naval Air Station Oceana, Virginia Beach, VA was the purchase of noise easements on adjacent lands. Millions of dollars have been spent with residents receiving up to 75 percent of the land's value. This has proven ineffective in reducing complaints or dissuading development. The only truly effective means to maintain the training mission is for the military to purchase the impacted lands and use them as a buffer zone between noise-generating training activities and the surrounding community.

DEGRADED READINESS

10. Senator ALLARD. Major General Van Antwerp, have the impacts of encroachment degraded training to the point that unit commanders have lowered their training readiness rating on their monthly status reports? What actions must we take now and in the future to avoid degradation of training readiness?

General VAN ANTWERP. Unit commanders have not yet lowered their training readiness ratings due to these encroachment issues. Instead, commanders have developed "work-arounds" to continue training in order to maintain their readiness posture and to accomplish the mission. Although these "work-arounds" must support training requirements based on doctrinal standards, they make the training experience sub-optimal. When training combines a number of "work-arounds," the adverse impacts on training are magnified and cumulative.

The Army's comprehensive effort to ensure readiness and minimize impacts of encroachment is its Sustainable Range Management (SRM) initiative. The objective of SRM is to maximize the capability, availability, and accessibility of ranges and training land to support doctrinal training and testing requirements. SRM is based on three tenets: (1) Develop and Maintain Scientifically Defensible Data. We must have complete data on all aspects of ranges—their operational characteristics as training facilities, their physical characteristics as real property, and their characteristics as part of the natural and cultural environment; (2) Integrate Management across the four disciplines that directly affect ranges: range operations and modernization, facilities and installation management, explosives safety management, and environmental management; and (3) Establish an Outreach Campaign—to inform and address the concerns of the community so all may gain an understanding of why the Army must conduct training and testing, and how we are moving to a more sophisticated management approach to ensure that the public's concerns are addressed. The Army Deputy Chief of Staff for Operations and Plans (DCSOPs) leads this initiative and is working with my office and other Army organizations to develop and implement SRM. We anticipate that SRM will lead to a better understanding of our training and testing activities, both within and outside the military. SRM will promote a more informed dialogue when weighing national security and environmental requirements.

The Army recommends that Congress support and resource the implementation of the Army's SRM initiative. SRM is the foundation for assuring continued live training and environmental stewardship on our ranges. We will continue to improve range operations, range modernization, state-of-the-art land management, research on the effects of munitions constituents, UXO management, and public outreach. We also recommend that Congress support and encourage cooperation among regulators and the military in ways that emphasize the need to harmonize military readiness concerns and environmental regulation. The Army believes that Congress should continue to recognize that Army readiness is a positive societal good and a legal mandate. Defense of our Nation is an important requirement that benefits all citizens. I strongly believe there are effective ways to harmonize the needs of the military with the needs of the environment and I firmly believe it is in our Nation's best interest to do so.

QUESTIONS SUBMITTED BY SENATOR DANIEL K. AKAKA

CLEAN-UP OF UNEXPLODED ORDNANCE

11. Senator AKAKA. Major General Van Antwerp, Vice Admiral Amerault, Major General Buchanan, and Major General Hanlon, the Department of Defense faces a bill for the clean-up of unexploded ordnance (UXO) that is at least in the tens of billions of dollars, and could well be in the hundreds of billions of dollars. General Buchanan's prepared statement indicates, with regard to unexploded ordnance, that "remediating closed ranges and clearing active ranges will need to be a long and incremental process to be affordable under today's budgets. . . . Anything more aggressive than a long-term program will significantly strain present readiness ac-

counts.” At current funding levels, it has been estimated that it would take the military services several thousands years to remediate UXO on a DOD-wide basis.

What do you believe would be an acceptable time period for cleaning up unexploded ordnance problems throughout the Department of Defense?

General VAN ANTWERP. Timing of UXO responses will depend on the level of explosives safety risks and environmental impacts at individual sites. Sites with high numbers of UXO and high levels of public access often require a rapid response to reduce risk quickly. This initial response may be followed up with a more systematic response as personnel and fiscal resources are available. The total duration of a given response action is largely based on the size and complexity of the individual site and the degree of cooperation between the military and other stakeholders, including regulators.

The Army continues to fund actions on our base closure and realignment sites identified for transfer to make these properties available as quickly as possible. In addition, the Army receives DOD funding for actions on Formerly Used Defense Sites (FUDS), as DOD’s Executive Agent. Our current FUDS cost-to-complete estimate is \$12 billion, of which \$8 billion is UXO-related. At the current DOD funding level it will take 60 years to complete the entire program. In addition to the necessity for increased UXO funding, I believe we need a uniform regulatory process that considers explosives safety as the principal concern in the decision-making process.

According to the Army’s Fiscal Year 2000 Financial Statement, liabilities for UXO were estimated at approximately \$13 billion for conducting response at closed, transferred, and transferring sites. Assuming Congress determined to fully fund that liability over a 20–40 year timeframe, annual funding of \$650 to \$325 million, respectively, would be required.

Admiral AMEREAULT. I would not venture a guess at this point in time. Navy is currently developing a long-term strategy to accomplish two strategic goals; 1) remediation of closed, transferred, and transferring (CTT) ranges and 2) sustainment of active and inactive training ranges to meet mission essential requirements. UXO clearance at active ranges is service specific and is an ongoing requirement as part of range management and sustainment. It is too early in the process to speculate on what is an acceptable timeframe to complete CTT UXO response actions. The CTT program is in its infancy and current cost estimates show a wide degree of variability. As we begin to better characterize ranges, cleanup requirements, and promising technologies that provide acceptable long-term solutions, Navy can better address program affordability and completion goals.

General BUCHANAN. It is important that we understand that some locations have been involved in ordnance activities for over a century. We feel it will take decades to clean up such a legacy. Federal lands managed by DOD contain places of historic significance and areas where munitions disposal was accomplished by burial. For example, DOD is still addressing the World War I era mustard gas contamination in the Spring Valley neighborhood of our Nation’s capital. Technology will expand in the areas of UXO detection and remediation. We expect these emerging technologies will accelerate UXO clean-up at a cost less than today’s traditional, manpower intensive clean-up techniques. As we further study the extent of UXO contamination, to include locations and depths, we will refine both the cost and time estimates to complete necessary clean up.

General HANLON. It is extremely difficult to place a time frame for remediating closed, transferring, and transferred (CTT) range and conducting clearance on active ranges due to the many variables (e.g., state of remediation/clearance technologies, future land use, etc.) impacting the costs to conduct these activities. Our experience, however, with the installation restoration program indicates that as time progresses and new technologies are developed, costs for cleanup of particular sites have decreased. We would anticipate the same would be true for UXO remediation/clearance.

UNEXPLODED ORDNANCE CHARACTERIZATION AND REMEDIATION ACTIVITIES

12. Senator AKAKA. Major General Van Antwerp, Vice Admiral Amerault, Major General Buchanan, and Major General Hanlon, General Van Antwerp’s prepared statement indicates that “The UXO characterization and remediation activities conducted at Army sites using currently available technology is extremely expensive and often yields unsatisfactory results. Advanced technology offers the potential to significantly reduce the Department’s liability and safely and effectively cleanup land so it may be safely used for other activities.”

Do you believe that increased investment in UXO remediation technologies would be likely to produce more effective and efficient remediation processes and substan-

tially reduce the Department's long-term clean-up liability and the time required to complete such clean-up?

General VAN ANTWERP. Yes. Most of Army's UXO technology investments are directed at detection and discrimination methods. Increased detection and discrimination capabilities will significantly reduce the cost of remediation by reducing the percentage of false positive detections. Currently the excavation of "detections" results in the uncovering of harmless scrap and artifacts much more often than it does actual UXO. This significantly drives up the cost of remediating a site. An additional benefit of technology investments for detection/discrimination and remediation will be reduced natural resource injury. Many of our ranges are in fact wildlife refuges in the middle of urbanizing regions. Current remediation processes may destroy these valuable habitats. In some cases, the military may be accountable for the cost of those damages as well.

In addition to investing in detection and response technology, we need to invest in developing a standard risk assessment methodology. Currently there is a plethora of risk assessment methods being used ad hoc across Army and DOD and by State and Federal regulators. Without a standard risk assessment methodology, it will be difficult to prioritize actions across all sites, and even more difficult to program and budget properly for this program. In addition to a standard risk assessment methodology, we also need standard risk management tools. Development of standard risk management tools depends on developing one national risk-based regulatory framework.

Improved site characterization technologies should have a significant impact and positive impact on UXO responses. Ground-based digital geophysical mapping will continue to improve and will enhance the overall effectiveness and confidence stakeholders have in the responses that are being conducted. It is, however, continued investment in development and integration of new technologies into all phases of the UXO response process that will have the greatest longer-term effect.

Finally, many significant impediments act as disincentives to investment in UXO response technology. One such impediment is the lack of a national process for UXO response. Therefore, it is difficult to know exactly what the requirements are, and difficult to predict what response technologies to develop. Without agreement on the process and standards, the incentive to invest in response technology is limited.

Admiral AMERALT. The Navy believes that technology discovery and development may lead to increased effectiveness and efficiencies in UXO responses. Each service has been assigned lead responsibility for a specific program area. Army is the lead service for UXO, including development of UXO response technologies. Navy's contribution, like the other services and non-DOD stakeholders, is to identify UXO response requirements to help focus R&D investment efforts. Army relies on two Department of Defense programs to provide investment into developing response technologies for UXO that support the services' requirements:

- The *Strategic Environmental Research and Development Program* (SERDP) provides funding for basic research pertaining to the environment, including cleanup.
- The *Environmental Security Technology Certification Program* (ESTCP) provides funds to move ideas and concepts from the laboratory to real life application.

Since the majority of Navy operations take place outside of U.S. territorial seas it has identified 161 million acres of water ranges or operation areas that are considered to be part of the active range inventory.

The vast majority of these ranges are in deep-water, open ocean areas that pose negligible safety or chemical contamination risks.

The current state of UXO technology does not support large-scale water based UXO removal. Land based technologies used for detection and discrimination of UXO have not proven to be viable for underwater environments.

Navy is currently developing a risk-based cleanup model to evaluate the potential for cleanup response actions associated with UXO in very shallow waters and along coastal shore areas. This model will assess the potential explosives safety risks associated with human exposure to UXO that may result from past disposal of munitions in the water or from former training activities conducted at ranges now designated as closed. Response actions for either of these two scenarios will be undertaken as part of the Navy's environmental restoration program.

General BUCHANAN. Yes, increased investment in UXO technologies would likely reduce long-term clean-up liability and schedule. As demonstrated in the Installation Restoration Program, the development and application of new technologies have allowed DOD to restore and return land for re-use more quickly and with greater cost-effectiveness. Development of remediation technologies is only part of the re-

sponse for UXO clean up on DOD lands. Detection of UXO and its explosive constituents represent the first challenge and initial step prior to any remediation. Given the diverse terrain and climates of DOD test and training ranges, detection may be difficult for UXO buried in the soil or covered by dense vegetation. Therefore, the development of UXO detection technology is necessary to support UXO remediation efforts.

General HANLON. The Marine Corps is not directly involved in the development of technologies for clearance or remediation of UXO. Although this research and development is accomplished by the other military services, the Marine Corps actively participates on the boards that functionally review these technologies. Based on our experience with the installation restoration program, however, increased investment in new remediation technologies would likely produce more effective and efficient remediation processes and reduce our cleanup liability.

CURRENT AND PROJECTED COSTS FOR REMEDIATION

13. Senator AKAKA. Major General Van Antwerp, Vice Admiral Amerault, Major General Buchanan, and Major General Hanlon, 2 years ago, this committee required the Department of Defense to provide us with a complete estimate of the current and projected costs for remediation of UXO at active and closed military bases. Although this report was due on March 1, we have not yet received it. Moreover, we have been told that despite specific direction from Congress, the report will not address remediation costs at active bases, and it will not address costs of cleaning chemical residues and addressing possible groundwater contamination.

Do you believe that the Department needs a systematic approach to its unexploded ordnance problems, and that this must include the cataloging, categorization, and prioritization of all UXO problems?

General VAN ANTWERP. Yes, I do believe the Department needs such a system. The Army has begun the cataloging process with the initiation of our inventory of ranges. The inventory, begun in 2000, is expected to be complete in 2003. The Army Environmental Center is collecting data on terrain, natural resources, and other factors on the Army's Active, Inactive, Closed, Transferring, and Transferred ranges. The Center for Army Analysis has begun developing a UXO prioritization model for use in supporting funding decisions. The categorizing (i.e., characterization) of UXO sites is difficult. Without an agreement with regulators as to the proper means of UXO site characterization and response requirements, we cannot fully identify the cost of our UXO response program. Much more work and coordination on this issue is necessary.

Admiral AMERAULT. Yes, the Navy supports a systematic approach in dealing with unexploded ordnance issues. The Navy is developing policy that focuses on the effective and efficient management of its ranges and training areas. These policies will include best management practices for UXO on ranges and training areas to ensure long-term sustainability. The Navy has budgeted \$8 million in fiscal year 2002 to begin assessment of UXO contamination on Closed, Transferring, and Transferred ranges. The extent of UXO contamination on active ranges is not known. We are currently identifying data gaps so the necessary research can be developed to characterize the fate and effects of UXO contaminants on all of our ranges. Although impacts to readiness from UXO have been minimal to date, the Navy is committed to its good environmental stewardship.

General BUCHANAN. Yes, DOD must develop an approach much like what you've outlined here. To respond effectively and with available funding, DOD has aligned its range response efforts into two categories: active and inactive; and closed, transferred, and transferring. For all ranges, DOD complies with all Federal mandates and continues its environmental stewardship to manage these lands. Since active and inactive ranges are used for training, clearance of munitions, rather than remediation, is more appropriate. The closed, transferred, and transferring ranges are properties that have been selected for other uses. Closed ranges are still under DOD control while transferred and transferring ranges are typically Formerly Used Defense Sites (FUDS) and Base Realignment and Closure (BRAC) properties. Since DOD's remediation activities must be prioritized based on risk to human health and the environment, DOD's limited cleanup funds must be focused on the restoration of transferred and transferring ranges, as these properties are destined for turn-over to other government or public uses.

General HANLON. The Marine Corps is working with OSD and the other Services on a systematic approach regarding UXO on our ranges. As part of putting together the UXO Report to Congress, the Services developed an inventory of all active/inactive, closed, transferred, and transferring ranges. This data along with site-specific

data such as munitions types, estimated densities, and future land use will be used to establish priorities for UXO response on closed, transferred, and transferring ranges. In addition, a joint Service working group is developing a DOD directive for sustainable range management to address UXO issues on our active ranges.

STANDARDS FOR CLEANUP

14. Senator AKAKA. Vice Admiral Amerault, at a briefing on the DOD unexploded ordnance (UXO) report, our staff was told that the cleanup estimates presume that all cleanup will be done to current standards—clearing all UXO to a depth of either 10 feet or 4 feet, depending on the intended use of the property. The briefers stated that they are not aware of any case where the Department planned to fence off rangelands without clearing UXO, or to clear UXO to a depth of less than 4 feet. In Hawaii, however, we are being told that it is too expensive to clear UXO from Kaho’olawe to this standard, and that the Department would like to fence some areas off and clear other areas only to a depth of 4 inches.

Does DOD have a clear standard for the clean-up of UXO? If so, what is that standard, and do you intend to live up to it on Kaho’olawe?

Admiral AMERAULT. Depth of clearance for UXO is determined by evaluating site-specific conditions and reasonably anticipated reuse of the property and may be mitigated by factors such as vegetation, topography, geology or technology. For example, the UXO cleanup of the former Navy bombing range at Nomans Land Island off the coast of Massachusetts has been limited to surface clearance only. This is consistent with the intended reuse of the property by the Fish and Wildlife Service as an unmanned wildlife refuge. Subsurface clearance to a depth of 4 or 10 feet would destroy the island’s natural habitat, the main reason the Fish and Wildlife Service finds the property valuable. In the absence of site specific information, the Department of Defense Explosives Safety Board (DDESB) uses a depth of clearance planning criteria of 1 foot, 4 feet, and 10 feet and has described reuses that are supported by each level of clearance. This should not be construed as determining a cleanup standard.

With respect to UXO clearance standards applicable to Kaho’olawe, the fiscal year 1994 Defense Appropriations Act directed the Secretary of the Navy to convey Kaho’olawe to the state of Hawaii, established the Kaho’olawe Island Conveyance, Remediation and Environmental Restoration Trust Fund, and “authorized to be appropriated” into this fund \$400 million over 10 years for cleanup. The state of Hawaii receives not less than 11 percent of all Trust funds. Navy transferred Kaho’olawe by quitclaim deed to Hawaii in 1994 and signed a Memorandum of Understanding (MOU) that allows Navy to retain access control until November 2003 or cleanup completion, whichever occurs first.

The MOU between the Navy and the state of Hawaii stipulated a two-tiered cleanup approach and established goals of 100 percent surface and 30 percent subsurface clearance between 1–4 feet. To date, the Navy has cleared UXO from 7,028 acres of land on Kaho’olawe, including both surface and subsurface clearance. The Navy is in negotiation with the Kaho’olawe Island Reserve Commission (KIRC) to reprioritize cleanup actions to reflect current funding and reuse expectations consistent with a goal of cleanup completing all work by the end of the 10-year effort, that is, November 2003.

[Whereupon, at 11:46 a.m. the subcommittee adjourned.]

